3/5/10

Working File Folder - NSR Permit

Company Name: ConocoPhillips Company
County: Live Oak
Account: no account Permit No: 87632
RN#: 100698112

Company: Conoco Phillips | Permit #: 87632 | Project #: 154205

☐ New ☑ Revise ☐ Renew ☐ Void | ☑ PBR ☐ StdP ☐ GOP | Date Rec'd: 1-28

RN: 105698112 | Other Air at Site? ☐Yes ☑No | List #s/Prev Reviewer:

PBR/SP/GOP #: 352,492,512 | Site Rvw Req'd? ☐Yes ☑No | Industry & Project: oil & gas

Reply to Void? ☐Yes ☑No | County: Live Oak | NA Area? ☐Yes ☑No

Info As Provided: Fee? ☑Yes ☐No | Toxics Project ☐Yes ☑No | Site PSD or NNSR? ☐Yes ☑No

Correct Appl Form? ☑Yes ☐No | NSPS, MACT ☑Yes ☐No | Netting Provided? ☐Yes ☑No

Forms Signed? ☑Yes ☐No | Ch 115, 117 ☐Yes ☐No | Site FOP Major? ☐Yes ☑No

Project Description? ☑Yes ☐No | Emissions Info? ☑Yes ☐No | Checklists/Rule info? ☑Yes ☐No

Issues / Info: add engine, 4-500bbl tanks, and associated components

Reviewer:

Rating: ☐ Simple ☑ Moderate ☐ Complex | ☐ Other: | Date Screened: 2-1

Recommend? ☐ New ☑ Mid-Level ☐ Sr-Level ☐ Tech Sp | ☐ Other: | Rvwr Initials: CWB

Assigned to: RAY | Date Transfer: | UNIT/TYPE ENTERED: ✓

Reviewer: actions taken based on notes above

RAY

Initial Review Date:

Draft TRV GW Doc:

TCEQ Route Slip

Date 2-1-10

TO:	RAY LAY	FROM:	DONNA WURST
MC:	R14	MC:	163
Office:	OPR/APD/R&R SECTION	Office:	OPR/APD/R&R SECTION

Attachment(s) for:

___ Information
___ Review
___ Comment/Response
___ Approval
___ Your Signature
___ Signature of:____

Comments:

TCEQ-00001 (Rev. 10/2002)

ermit/Registration Application Processi cklist

FOLDER PREPARATION

- Prepare file folder for public file (Non-Confidential Information only) File
- Prepare Confidential file folder if applicable

154205 / 87632

IMS PROJECT CREATION (Ensure you enter the following into IMS based on info on the APPLICATION)

- Verify company name in **SOS** - Note Tax ID:_____ and Business Type_____
- Check for **duplicates**: From NSR home page search by permit number/RN/Customer Name - use fee information and rule numbers
- Verify you have the correct RN by address/name
- New **CN/RN** - Research to make sure you are not creating duplicate CN or RN
- For all rules except 261, 262 - identify previous permit number to use for alteration if one exists with same rule number.
- New project number: _____
- Complete project detail, edit RN/CN, edit permit, contacts, rules, fee payment, assign staff, tracking elements, attributes, public notice, notes, and links sections as required.
- Commit to central registry

APPLICATION FILE REVIEW

- **REGION 12** - Check for Houston Air Toxics applications - email to Johnny and Don
- Apply in **EPAY** if paid by voucher / Enter fee amount / Enter payment number / Copy of check in file
- Note **DEFICIENCIES** with application
- **PUBLIC NOTICE** - see Public Notice checklist
- **SITE REVIEW** - From APD menu (APIRT/NSR/Request for Comment/Permit by Rule) Enter project number & today's date/Select recipient (ART/etc.)/ Send email = YES /Change Information as needed (Date / Contact information /Punctuation on Company name and address/ Local Program Y N) Profile electronic copy- "Save as a new document" - follow profiling guidelines / **From email, must delete file that automatically attaches and then attach the file you just profiled and then send**/Print site review for the file / Print properties page of email and place in file with site review print out /Update tracking elements

FINAL REVIEW SECTION - Before transferring the file, please ensure the following items have been completed:

- Add **STAFF ASSIGNMENTS** (Technical Engineer Team)
- Enter **TRANSFER DATE** in tracking
- Verify **SIGNATURE** on application. Applies only to PI-1 forms. If not signed and box IIIa is checked yes - don't need this form - call them. If original signature not provided, create note to technical staff regarding original signature. No signature required for PBR's unless the PI-7 Cert Section IIIa is checked yes.
- Print **COMPLETED MIKEY** and place in file
- Check **FILE LABEL** to verify information remained the same
- Include hard **COPY OF ALL EMAILS** in file (sent and received from CR, customer, APIRT, etc.) / Include phone log for all calls
- Confirm that all required IMS updates and **TRACKING ELEMENTS** were entered on the project record (as applicable)
- Confirm **SITE REVIEW** completed as appropriate
- Confirm **PUBLIC NOTICE** completed as appropriate
- Confirm **LEG LETTERS** completed as appropriate
- Finish **CHECKLIST** on left side of file (PS 1's only)

PBR Ker.
Duplicate
Permit
Staff
Account
12
Contact
Fee/EPAY
Rules
SR
SOS
CR
TR
Confidential
Label
Date Stamped
DFC - permit
RNEW - permit

Concrete Batch Plant
R#
FEE DATE
STAFF - M/C
TR
12
PN Checklist
PN Tab
Language
PORTABLE Tab

Initial
DUP
ST & ST 2
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Confidential
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DFC 1
SITE REVIEW
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Renewal
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NOTE date renewal letter mail
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Amendment
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DFC 2
12
ACCT

FIND ENTITY NAME SEARCH

This search was performed on with the following search parameter:
ENTITY NAME : conocophillips company

Mark	Filing Number	Name	Entity Type	Entity Status	Name Type	Name Status
◉	1157706	ConocoPhillips Company	Foreign For-Profit Corporation	In existence	Legal	In use
○	800124328	ConocoPhillips	Foreign For-Profit Corporation	Withdrawn	Legal	Inactive
○	800124328	ConocoPhillips Inc.	Foreign For-Profit Corporation	Withdrawn	Fictitious	Inactive
○	800148988	ConocoPhillips Services Inc.	Foreign For-Profit Corporation	Terminated	Legal	Inactive
○	800357341	CONOCOPHILLIPS DEVELOPMENTS LLC	Foreign Limited Liability Company (LLC)	In existence	Legal	In use
○	2397806	CONOCOPHILLIPS COMMUNICATIONS INC.	Foreign For-Profit Corporation	In existence	Legal	In use
○	133129801	CONOCOPHILLIPS FOUNDATION	Domestic Nonprofit Corporation	Voluntarily dissolved	Legal	Inactive
○	801047611	ConocoPhillips CPP Funding LLC	Foreign Limited Liability Company (LLC)	In existence	Legal	In use
○	508006	CONOCOPHILLIPS PIPE LINE COMPANY	Foreign For-Profit Corporation	In existence	Legal	In use
○	800855825	ConocoPhillips Sweeny Cogen LP, LLC	Foreign Limited Liability Company (LLC)	In existence	Legal	In use

Records 1 to 10 of 14 scroll Next >> **OR** proceed to page of 2 pages GO

Return to Order | New Search

Instructions:
- To view additional information pertaining to a particular filing select the number associated with the name.
- To place an order for additional information about a filing select the radial button listed under 'Mark' that is associated with the entity and press the 'Order' button.

TCEQ ePay Voucher Receipt

Transaction Information

Voucher Number:	87873
Trace Number:	582EA000064939
Date:	01/19/2010 10:48 AM
Payment Method:	CC - Authorization 0000187408
Amount:	$450.00
Fee Type:	PERMIT BY RULE - NOT SMALL BUSINESS, CITY OR ISD
ePay Actor:	Kate Branning

Payor Information

Payor Name:	Mary K Branning
Company:	Conocophillips Company
Address:	600 N Dairy Ashford 3wl-15060, Houston, TX 77079
Phone:	832-486-2110

Site Information

Site Name:	SUGARKANE CENTRAL BATTERY
Site Location:	FROM PAWNEE GO 1 MILE NORTH ON HWY 72 TO FM-882 GO APPROX 10.5 MILES ON FM-882 T

Customer Information

Customer Name:	CONOCOPHILLIPS COMPANY
Customer Address:	600 N DAIRY ASHFORD 3WL-15060, HOUSTON, TX 77079

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 5, 2010

MS KATE BRANNING
STAFF ENVIRONMENTAL SCIENTIST
CONOCOPHILLIPS COMPANY
600 N DAIRY ASHFORD ST WL3 15060
HOUSTON TX 77079-1100

Permit by Rule Registration Number:	87632
Location/City/County:	From Pawnee go 1.0 mile north on Highway 72 to FM 882; go ~10.5 miles on FM 882; turn right on lease road & go ~ 1.0 mile down lease road to the site. Pawnee, Live Oak County
Project Description/Unit:	Sugarkane Central Battery 1
Regulated Entity Number:	RN105698112
Customer Reference Number:	CN601674351
New or Existing Site:	New
Affected Permit (if applicable):	None
Renewal Date (if applicable):	None

ConocoPhillips Company has certified the emissions associated with the continued overall operation of the process equipment at the Sugarkane Central Battery 1 under Title 30 Texas Administrative Code §§ 106.352, 106.492, and 106.512. For rule information see http://www.tceq.state.tx.us/permitting/air/nav/numerical_index.html.

The maintenance, startup, and shutdown emissions consisting of compressor blowdowns have been previously reviewed and authorized for this registration. The company is also reminded that these facilities may be subject to and must comply with other state and federal air quality requirements.

All analytical data generated by a mobile or stationary laboratory to support the compliance with an air permit must be obtained from a NELAC (National Environmental Laboratory Accreditation Conference) accredited laboratory. For additional information regarding the laboratory accreditation program, please see the following website which includes the accreditation and exemption information:
http://www.tceq.state.tx.us/compliance/compliance_support/qa/env_lab_accreditation.html.

This certification is taken under the authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have questions, please contact Mr. Raymond D. Lay at (361) 825-3426.

Sincerely,

Anne M. Inman, P.E., Manager
Rule Registrations Section
Air Permits Division

cc: Air Section Manager, Region 14 - Corpus Christi

Project Number: 154205

Certified Site-wide Emissions:

VOCs	23.92	tpy
HAPs (included in VOC)	4.28	tpy
H_2S	<0.01	tpy
SO_2	0.46	tpy
CO	53.58	tpy
NO_x	28.43	tpy
PM_{10}	0.55	tpy

TECHNICAL REVIEW: AIR PERMIT BY RULE

Permit No.:	87632	*Company Name:*	ConocoPhillips Company	*APD Reviewer:*	Mr. Raymond D. Lay
Project No.:	154205	*Unit Name:*	Sugarkane Central Battery 1	*PBR No(s).:*	106.352, 106.492, and 106.512

GENERAL INFORMATION			
Regulated Entity No.:	RN105698112	Project Type:	Permit by Rule Application
Customer Reference No.:	CN601674351	Date Received by TCEQ:	January 28, 2010
Account No.:	None	Date Received by Reviewer:	February 01, 2010 (Electronic copy) February 03, 2010 (Original)
City/County:	Pawnee, Live Oak County	Physical Location:	From Pawnee go 1.0 mile north on Highway 72 to FM 882; go ~10.5 miles on FM 882; turn right on lease road & go ~ 1.0 mile down lease road to the site.

CONTACT INFORMATION					
Responsible Official/ Primary Contact Name and Title:	Mr. Randy C. Black Manager Production Operations West	Phone No.: Fax No.:	(832) 486-2110	Email:	randy.c.black@conocophillips.com
Technical Contact/ Consultant Name and Title:	Ms. Kate Branning Staff Environmental Scientist	Phone No.: Fax No.:	(832) 486-2110 (918) 662-6171	Email:	kate.k.branning@conocophillips.com

GENERAL RULES CHECK	YES	NO	COMMENTS
Is confidential information included in the application?		X	Non-confidential information was submitted.
Are there affected NSR or Title V permits for the project?		X	There are no NSR or Title V Permits associated with the ConocoPhillips Company (ConocoPhillips) Sugarkane Central Battery 1 (SCB1).
Is each PBR > 25/250 tpy?		X	Certified Site-Wide Emissions: 23.918 tpy of VOC, 28.427 tpy of NO_x, 53.582 tpy of CO, 0.455 tpy of SO_2, 0.546 tpy of PM_{10}, 0.002 tpy of H_2S, and 4.283 tpy of HAPS.
Are PBR sitewide emissions > 25/250 tpy?		X	See the Estimated Emissions table below.
Are there permit limits on using PBRs at the site?		X	N/A, there are no permit limits on using PBRs at the SCB1.
Is PSD or Nonattainment netting required?		X	The project has not triggered a PSD review. The SCB1 is located in Live Oak County, which is classified as an attainment county. The project has not triggered a nonattainment review.
Do NSPS, NESHAP, or MACT standards apply to this registration?	X		MACT 40 CFR 63 Subparts ZZZZ & JJJJ.
Does NOx Cap and Trade apply to this registration?		X	The SCB1 is not located in Houston/Galveston area.
Is the facility in compliance with all other applicable rules and regulations?	X		ConocoPhillips has demonstrated that the SCB1 is in compliance under Title 30 Texas Administrative Code (TAC) §§ 106.352, 106.492, and 106.512.

DESCRIBE OVERALL PROCESS AT THE SITE

The SCB1 site receives production from several gas wells that flow continuously throughout the year. Produced gas flows through two separator systems where the hydrocarbon condensate and water are removed. Condensate liquids from the low-pressure separators will flow to one of ten condensate storage tanks (Emission Point No. [EPN] F1MSS-VRU). Produced water flows to a water storage tank (EPN F1MSS-VRU). Liquids from two JATCO units, the two fuel scrubbers and two discharge compressor scrubbers will flow to a common slop tank (EPN F1MSS-VRU). Liquids are removed from the site via tank truck, resulting in VOC emission from truck loading (EPN F1MSS-VRU).

Tank and loading emission are vented to a vapor recovery unit (VRU) with 95% control, which accounts for 5% VRU (EPN F1MSS-VRU) downtime. During VRU downtime, the vapors are routed to a flare with 98% destruction efficiency (EPNs F1MSS-VRU and F2MSS-BDWN).

The natural gas product from the low-pressure separator is compressed with a compressor driven by a lean-burn 633-horsepower (hp) Caterpillar G3508 TALE engine (EPN C-1) and one lean-burn 670-hp Caterpillar G3508 LE engine (EPN C-2). During compressor downtime, low-pressure gas will be sent to a flare (F2MSS-BDWN with 98% destruction efficiency.

Fugitive emissions may occur from valves, flanges, compressor seals, and other components (EPN FUG). There are two additional condensate tanks installed on site but are out of service.

DESCRIBE PROJECT AND INVOLVED PROCESS

ConocoPhillips has certified the emissions associated with the continued overall operation of the process equipment at the Sugarkane Central Battery 1 under Title 30 Texas Administrative Code §§ 106.352, 106.492, and 106.512.

ConocoPhillips proposes to incorporate one lean-burn 670-hp Caterpillar G3508 LE engine/compressor set (EPN C-2), four 500-bbl condensate storage tanks (EPNs T-7, T-8, T-9, and T-10), and associated components. In order to accommodate the aforementioned changes, ConocoPhillips would like to reduce the 20% safety factor represented in the PBR registration application dated March 5 2009 to 10%.

MSS emissions consisting of compressor blowdowns have been previously reviewed and authorized for the registration.

30 TAC §106.352 RULE CHECK		
REQUIREMENTS	YES, NO, or N/A	OTHER / COMMENTS
If the site conditions the natural gas (with a glycol dehydrator, amine unit, sulfur recovery unit, etc.), it handles less than two long tons per day of sulfur compounds (1 long ton = 2240 pounds).	N/A	There are no glycol dehydrator, amine unit, sulfur recovery units at the SCB1.
(1) All compressors will meet the requirements of 106.512.	YES	

TECHNICAL REVIEW: AIR PERMIT BY RULE

Permit No.:	87632	*Company Name:*	ConocoPhillips Company	*APD Reviewer:*	Mr. Raymond D. Lay
Project No.:	154205	*Unit Name:*	Sugarkane Central Battery 1	*PBR No(s).:*	106.352, 106.492, and 106.512

(1) All flares will meet the requirements of 106.492.	YES	
(2) Total emissions, including process fugitives, combustion unit stacks, separator, or other process vents, tank vents, and loading emissions from all such facilities constructed at a site under this section, will be equal to or below 25 tons per year (tpy) each of sulfur dioxide (SO_2), all other sulfur compounds combined, or all volatile organic compounds (VOC) combined; and 250 tpy each of nitrogen oxide and carbon monoxide.	YES	Certified Site-Wide Emissions: 23.918 tpy of VOC, 28.427 tpy of NO_x, 53.582 tpy of CO, 0.455 tpy of SO_2, 0.546 tpy of PM_{10}, 0.002 tpy of H_2S, and 4.283 tpy of HAPS.
(3) If the facility handles sour gas, it will be located at least ¼ mile from any recreational area or residence or other structure not occupied or used solely by the owner or operator of the facility or the owner of the property upon which the facility is located.	NO	
(4) Total emissions of sulfur compounds, excluding sulfur oxides, from all vents will be equal to or below 4.0 pounds per hour (lb/hr).	YES	Actual Sulfur Emissions = 0.04
(4) The height of each vent emitting sulfur compounds meets the following requirements, and is in no case less than 20 feet.	YES	Actual Vent Height = 30.
(5) If the site handles sour gas, the company will register the site by submitting Form PI-7 or PI-7-CERT before operations begin.	NO	PI-7-CERT

106.492 Flares:

1. CPC has included a description of how the exemption claim meets the general rule for the use of exemptions.
2. The flare is equipped with a tip designed to provide good mixing with air, flame stability and a tip velocity less than 60 ft/sec for gases having a lower heating value less than 1,000 BTU/ft^3, or less than 400 ft/sec for gases with a LHV greater than 1,000 BTU/ft^3
3. The flare is equipped with a continuously burning pilot or other automatic ignition system that assures gas ignition whenever vents are directed to the flare
4. The flare does not emit more than 4 lb/hr of reduced sulfur compounds, excluding sulfur oxides.
5. The flare emits less than 4 lb/hr of reduced sulfur compounds and is not equipped with an alarm system, does the stack height meet the requirements of condition (d) of §106.352, previously standard exemption STDX 66. Required height: 20 feet. The actual height: 30 feet.
6. The flare does not burn gases containing more than 24 ppmv of sulfur, chlorine or compounds containing either element.
7. The flare does not emit HCl,
8. The flare does emit SO_2, the heat release exceed the Btu/hr based on lower heating value.
9. CPC will limit the flare to burning only combustible mixtures of gases containing only carbon, hydrogen, nitrogen, oxygen, sulfur, chlorine, or compounds derived from these elements.
10. The gas mixture will always have a net or lower heating value of at least 200 BTU/ft3 prior to addition of air.
11. CPC understands and will ensure that liquids shall never be burned in the flare.

30 TAC §106.512 RULE CHECK		
REQUIREMENTS	YES, NO, or n/a	OTHER / COMMENTS
(1) The engines or turbines have been registered with Form PI-7 or PI-7-CERT within 10 days of the start of construction.	YES	Horsepower of engine = 670.
(1) Table 29 has been submitted for each proposed gas stationary internal combustion reciprocating engine.	YES	
(2) Any engines rated greater than 500-hp will meet the requirements of subparagraphs (A) - (C) of this paragraph.	YES	
(2)(A) Emissions of nitrogen oxides (NO_x) will not exceed the following limit: *Check which limit applies:*	YES	Actual NO_x Emissions = 2.0 g/hp-hr.
(2)(A)(ii) 2.0 g/hp-hr at manufacturer's rated full load and speed, and other operating conditions, except 5.0 g/hp-hr under reduced speed, 80-100% of full torque conditions, for any spark-ignited, gas-fired lean-burn engine, or any compression-ignited dual fuel-fired engine manufactured new after June 18, 1992;	YES	
(2)(B) The engine requires an automatic air-fuel ratio (AFR) controller in order to meet the NOx limits in subparagraph (2)(A).	YES	
(2)(B) The engine requires an automatic air-fuel ratio (AFR) controller in order to meet the following requirements: An AFR controller shall be deemed necessary for any engine controlled with a non-selective catalytic reduction (NSCR) converter and for applications where the fuel heating value varies more than ± 50 British thermal unit/standard cubic feet from the design lower heating value of the fuel. If an NSCR converter is used to reduce NO_x, the automatic controller shall operate on exhaust oxygen control.	NO	
2)(C) The records specified in (2)(C) of this PBR will be created and maintained by the owner or operator for a period of at least two years, made available, upon request, to the commission and any local air pollution control agency having jurisdiction.	YES	
(4) Any engine or turbine rated less than 500 hp or used for temporary replacement purposes is exempt from the emission limitations of paragraphs (2) and (3) above. Temporary replacement engines or turbines shall be limited to a maximum of 90 days of operation after which they shall be removed or rendered physically inoperable.	YES	Horsepower= 670. Temporary? NO.
(5) The gas fuel will be limited to: sweet natural gas or liquid petroleum gas, fuel gas containing no more than ten grains total sulfur per 100 dry standard cubic feet, or field gas.	YES	Type of fuel= Sweet field gas. Sulfur content of fuel gas (gr/100 dscf): 5.

TECHNICAL REVIEW: AIR PERMIT BY RULE

Permit No.:	87632	*Company Name:*	ConocoPhillips Company	*APD Reviewer:*	Mr. Raymond D. Lay
Project No.:	154205	*Unit Name:*	Sugarkane Central Battery 1	*PBR No(s).:*	106.352, 106.492, and 106.512

(6) Compliance with National Ambient Air Quality Standard (NAAQS) in the area of the proposed facility has been demonstrated.		Which method was used (A, B, or C)? A.

(6)(A) Ambient sampling or dispersion modeling, accomplished pursuant to guidance obtained from the executive director, was used to demonstrate NAAQS:

Engine Identifier / EPN	Max. Hourly Concentration of NO_2/NOx (from Screen3 modeling) ($\mu g/m^3$)	Max. Annual Concentration of NO_2/NOx (Max. Hourly Conc. X 0.08) ($\mu g/m^3$)	NO_2/NOx Ratio (from table below)	Annual Impact Concentration ($\mu g/m^3$)
C-1	134.80	10.784	---	1.67
C-2	126.40	10.112	---	1.66
			Background Concentration for County =	20.000
			TOTAL =	23.33
			Is total below NAAQS limit for NO_2 of 100 $\mu g/m^3$ (yes/no)?	YES

(7) The engine or turbine will not be used to generate electricity.	YES	

NATURAL GAS FIRED COMPRESSOR ENGINE

Engine Identifier (EPN/name)	Engine Information		Pollutant	Source of Emission Factor	Emission Factor Before Controls	Type of Control Device	Control Efficiency	Emission Factor After Controls	Emissions (lb/hr)	Emissions (tpy)
C-2 Caterpillar G3508 LE	Horsepower:	670	NMNEHC	Vendor	1.0	NONE			1.625	7.117
	Fuel Consumption (Btu/hp-hr):	7,510	NOx	Vendor	2.0				3.250	14.233
	2 or 4 stroke, Rich or Lean Burn:	4 Lean	CO	Vendor	4.0				6.499	28.467
	Hours of Operation per year:	8,760	PM_{10}	AP-42	0.00999				0.061	0.269
	Vendor Data Sheet Included?	YES	SO_2	AP-42	0.0477				0.293	0.320
	Date of Manufacture or Reconstruction:	8/09	CH_2O	AP-42	0.270				0.558	2.443

Does NSPS, Subpart JJJJ apply?	YES	Why or why not? If yes, how will requirements be met?	Original Mfr. date of 08/17/2009
Does MACT, Subpart ZZZZ apply?	YES	Why or why not? If yes, how will requirements be met?	Meets requirements of 40 CFR 63 JJJJ, no further requirements apply under this subpart.

COMMUNICATION LOG

Date	Time	Name/Company	Subject of Communication
03/09/10	9:55 am	Mr. Howard Uhal, Team Leader	Received an email from Mr. Uhal stating: "Ray, Please address Anne's comments per the attachment. The "additional flare emissions" cells are circled because it seems there should be some non-zero values for the short and long term emissions from that EPN. Let me know what you find. Thanks! Howard T. Uhal"
	10:17 am	Ms. Kate Branning, Staff Environmental Scientist	Sent an email to Ms. Branning stating: "I'm requesting that there should additional flare emissions (VOC) (EPN F1MSS-VRU) calculated and listed. Please revise Table 3-1 to include the VOC emissions (lb/hr and/or tpy). Please email the tables and checklist to me. Thank you for your cooperation in this request. Regards, Raymond D. Lay"
	11:09 am		Received a response email from Ms. Branning stating: "Mr. Lay, I will take a look at this today and get back to you. Thank you, Kate Branning"
03/10/11	9:01 am	Ms. Kate Branning	Ms. Branning called and left a voice message for this reviewer and to please call to discuss the matter.
	12:28 pm		Sent an email stating: "Ms. Branning, I've attached the Table 3-1 Emissions Summary that will be in the TRV. You will see what VOC emissions (bold & XXXX) that I'm talking about. What are those VOC emissions (lb/hr and tpy). Thanks, Raymond"
	2:08 PM		Received the revised Table 3-1 Emissions Summary with the VOC emissions from tanks T-7, T-8, T-9, & T-10.

TECHNICAL REVIEW: AIR PERMIT BY RULE

Permit No.:	87632	*Company Name:*	ConocoPhillips Company	*APD Reviewer:*	Mr. Raymond D. Lay
Project No.:	154205	*Unit Name:*	Sugarkane Central Battery 1	*PBR No(s).:*	106.352, 106.492, and 106.512

ESTIMATED EMISSIONS													
EPN / Emission Source	Specific VOC or Other Pollutants	VOC		NOx		CO		PM_{10}		SO_2		Other	
		lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
*Total Existing Facility Emissions	H_2S	3.654	16.308	11.637	14.193	51.426	25.110	0.059	0.261	0.333	0.135	0.004	0.002
	HAPs											0.414	1.836
C-2 / Lean-burn 670-hp Caterpillar G3508 LE Engine	HAPs	1.625	7.117	3.250	14.233	6.499	28.467	0.061	0.269	0.293	0.320	0.558	2.443
F1MSS-VRU / Additional Flare Emissions (T-7, T-8, T-9, & T-10)		<0.004	0.132	0.101	0.001	0.865	0.005	0.012	0.017	0.001	<0.001	<0.001	<0.004
FUG / Fugitive Emissions		0.082	0.361	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
TOTAL EMISSIONS (TPY):	**H_2S**		**23.918**		**28.427**		**53.582**		**0.547**		**0.455**		**0.002**
	HAPs												**4.283**
MAXIMUM OPERATING SCHEDULE:		**Hours/Day**		24	**Days/Week**		7	**Weeks/Year**		52	**Hours/Year**		8,760

* Changed 20% Safety Factor represented in Permit by Rule Application dated March 05, 2009 to 10% Safety Factor.

SITE REVIEW / DISTANCE LIMIT	Yes	No	Description/Outcome	Date	Reviewed by
Site Review Required?		X		March 5, 2010	Mr. Raymond D. Lay
PBR Distance Limits Met?	X		>100 feet to the nearest property line and >1,000 feet to the nearest off-property structure.	March 5, 2010	Mr. Raymond D. Lay

	TECHNICAL REVIEWER	PEER REVIEWER	FINAL REVIEWER
SIGNATURE:	Raymond D. Lay	Amanda Berry	Clyde Price
PRINTED NAME:	Mr. Raymond D. Lay	Ms. Amanda Berry	Mr. Clyde Price
DATE:	March 5, 2010	March 5, 2010	March 5, 2010

Correction made by Ray Lay on 03/10/2010, reviewed by H. Uhal

BASIS OF PROJECT POINTS	POINTS
Base Points: 106.352	2.00
Project Complexity Description and Points: 106.492 &106.512	1.00
Technical Reviewer Project Points Assessment:	3.00
Final Reviewer Project Points Confirmation:	3.00

02/01/10 (email copy)
02/03/10 (original)

01/29/2010 ----------NSR IMS - PROJECT RECORD ----------

PROJECT#: 154205 PERMIT#: 87632 STATUS: PENDING DISP CODE: _____
RECEIVED: 01/28/2010 PROJTYPE: REVISION AUTHTYPE: PBR ISSUED DT: _____
RENEWAL:
PROJECT ADMIN NAME: SUGARKANE CENTRAL BATTERY 1
PROJECT TECH NAME: SUGARKANE CENTRAL BATTERY 1

Assigned Team: RULE REG SECTION

STAFF ASSIGNED TO PROJECT:

GLASPIE-FELIX , SHELIA	- REVIEWR1_2 -	AP INITIAL REVIEW
TEAM LEADER , RR	- REVIEW ENG -	RULE REG SECTION

CUSTOMER INFORMATION (OWNER/OPERATOR DATA)
ISSUED TO: CONOCOPHILLIPS COMPANY
COMPANY NAME: ConocoPhillips Company
CUSTOMER REFERENCE NUMBER: CN601674351

XPRI (391273) & TRV (391274)

REGULATED ENTITY/SITE INFORMATION
REGULATED ENTITY NUMBER: RN105698112 ACCOUNT:
SITE NAME: SUGARKANE CENTRAL BATTERY 1

REGULATED ENTITY LOCATION: FROM PAWNEE GO 1.0 MI N ON HWY 72 TO FM 882 GO APPROX 10.5 MI ON FM 882 TURN R ON LEASE RD GO APPROX 1.0 MI DOWN LEASE RD TO SITE
REGION 14 - CORPUS CHRISTI NEAR CITY: PAWNEE COUNTY: LIVE OAK

CONTACT DATA

CONTACT NAME: MR RANDALL BLACK CONTACT ROLE: RESPONSIBLE OFFICIAL
JOB TITLE: MANAGER PRODUCTION OPERATIONS WEST ORGANIZATION: CONOCOPHILLIPS COMPANY
MAILING ADDRESS: 1516 DEMARET CT , LAREDO, TX, 78045-7542
PHONE: (361) 586-4050 Ext: 0
EMAIL:RANDY.C.BLACK@CONOCOPHILLIPS.COM

CONTACT NAME: MS KATE BRANNING CONTACT ROLE: TECHNICAL CONTACT
JOB TITLE: STAFF ENVIRONMENTAL SCIENTIST ORGANIZATION: CONOCOPHILLIPS COMPANY
MAILING ADDRESS: PO BOX 2197 , 3WL-15060, HOUSTON, TX, 77252-2197
PHONE: (832) 486-2110 Ext: 0
FAX: (918) 662-6171 Ext: 0
EMAIL:KATE.K.BRANNING@CONOCOPHILLIPS.COM

87632.XPRI-2 & TRV.DOCs

FEE:

Reference	Fee Receipt Number	Amount	Fee Receipt Date	Fee Payment Type
87673		450.00		ePAY

TRACKING ELEMENTS:

TE Name	Start Date	Complete Date
APIRT RECEIVED PROJECT (DATE)	01/28/2010	
APIRT TRANSFERRED PROJECT TO TECHNICAL STAFF (DATE)	01/29/2010	
CENTRAL REGISTRY UPDATED	01/29/2010	01/29/2010
DEFICIENCY CYCLE		
ENGINEER INITIAL REVIEW COMPLETED (DATE)		
PEER / MANAGER REVIEW PERIOD		
PROJECT RECEIVED BY ENGINEER (DATE)		

Permit Unit Type:

PROJECT RULES:

Rule Desc	Request Type	On Application	Approve
106.352 OIL AND GAS PRODUCTION FACILITIES -	ADD	Y	APPROVE
106.492 FLARES -	ADD	Y	APPROVE
106.512 ENGINES/TURBINES -	ADD	Y	APPROVE

PERMIT RULES:

Rule Desc	Start Date	End Date
106.352	03/31/2009	
106.492	03/31/2009	
106.512	03/31/2009	

01/29/2010 ----------NSR IMS - PROJECT RECORD ----------

PROJECT#: 154205 PERMIT#: 87632 STATUS: PENDING DISP CODE: _____
RECEIVED: 01/28/2010 PROJTYPE: REVISION AUTHTYPE: PBR ISSUED DT: _____
RENEWAL:
PROJECT ADMIN NAME: SUGARKANE CENTRAL BATTERY 1
PROJECT TECH NAME: SUGARKANE CENTRAL BATTERY 1

Assigned Team: RULE REG SECTION

STAFF ASSIGNED TO PROJECT:

GLASPIE-FELIX , SHELIA	- REVIEWR1_2 -	AP INITIAL REVIEW
TEAM LEADER , RR	- REVIEW ENG -	RULE REG SECTION

CUSTOMER INFORMATION (OWNER/OPERATOR DATA)
ISSUED TO: CONOCOPHILLIPS COMPANY
COMPANY NAME: ConocoPhillips Company
CUSTOMER REFERENCE NUMBER: **CN601674351**

REGULATED ENTITY/SITE INFORMATION
REGULATED ENTITY NUMBER: **RN105698112** ACCOUNT:
SITE NAME: SUGARKANE CENTRAL BATTERY 1

REGULATED ENTITY LOCATION: FROM PAWNEE GO 1.0 MI N ON HWY 72 TO FM 882 GO APPROX 10.5 MI ON FM 882 TURN R ON LEASE RD GO APPROX 1.0 MI DOWN LEASE RD TO SITE
REGION 14 - CORPUS CHRISTI NEAR CITY: PAWNEE COUNTY: LIVE OAK

CONTACT DATA

CONTACT NAME: MR RANDALL BLACK CONTACT ROLE: RESPONSIBLE OFFICIAL
JOB TITLE: MANAGER PRODUCTION OPERATIONS WEST ORGANIZATION: CONOCOPHILLIPS COMPANY
MAILING ADDRESS: 1516 DEMARET CT , LAREDO, TX, 78045-7542
PHONE: (361) 586-4050 Ext: 0
EMAIL:RANDY.C.BLACK@CONOCOPHILLIPS.COM

CONTACT NAME: MS KATE BRANNING CONTACT ROLE: TECHNICAL CONTACT
JOB TITLE: STAFF ENVIRONMENTAL SCIENTIST ORGANIZATION: CONOCOPHILLIPS COMPANY
MAILING ADDRESS: PO BOX 2197 , 3WL-15060, HOUSTON, TX, 77252-2197
PHONE: (832) 486-2110 Ext: 0
FAX: (918) 662-6171 Ext: 0
EMAIL:KATE.K.BRANNING@CONOCOPHILLIPS.COM

FEE:

Reference	Fee Receipt Number	Amount	Fee Receipt Date	Fee Payment Type
87873		450.00		ePAY

TRACKING ELEMENTS:

TE Name	Start Date	Complete Date
APIRT RECEIVED PROJECT (DATE)	01/28/2010	
APIRT TRANSFERRED PROJECT TO TECHNICAL STAFF (DATE)	01/29/2010	
CENTRAL REGISTRY UPDATED	01/29/2010	01/29/2010
DEFICIENCY CYCLE		
ENGINEER INITIAL REVIEW COMPLETED (DATE)		
PEER / MANAGER REVIEW PERIOD		
PROJECT RECEIVED BY ENGINEER (DATE)		

Permit Unit Type:

Texas Commission on Environmental Quality
Form PI-7-CERT
Certification and Registration for Permits by Rule

I. REGISTRANT INFORMATION			
A. TCEQ Customer Reference Number:	CN- 601674351	TCEQ Regulated Entity Number:	RN- 105698112
Note: If "NO," CN or RN number was entered above; please fill out the required Core Data Form, which will be available in Step II of the submittal process.			
B. Company or Other Legal Customer Name: ConocoPhillips Company			
Company Official Contact Name: Randall Black		Title: Manager Production Operations - West	
Mailing Address: Walker Plaza, 1516 Demaret Court			
City: Laredo		State: Texas	Zip Code: 78045
Phone No.: 361-586-4050	Fax No.:	E-mail Address: Randy.C.Black@conocophillips.com	
C. Technical Contact Name: Kate Branning		Title: Staff Environmental Scientist	
Company: ConocoPhillips Company			
Mailing Address: P.O. Box 2197 3WL-15060			
City: Houston		State: Texas	Zip Code: 77252
Phone No.: 832-486-2110	Fax No.: 918-662-6171	E-mail Address: kate.k.branning@conocophillips.com	
D. Facility Location Information - Street Address:			
If "NO," street address, provide written driving directions to the site: (attach description if additional space is needed)			
From Pawnee, go 1 mile north on Hwy 72 to FM-882. Go approx. 10.5 miles on FM-882, turn right on lease road and go ~1 mile.			
City: Pawnee	County: Live Oak		Zip Code: 78145

II. FACILITY AND SITE INFORMATION		
A. Name and Type of Facility: Sugarkane Central Battery 1		☑ Permanent ☐ Portable
B. PBR claimed under **30 TAC § 106** *(List all)*:		
§ 106. **352 Oil and Gas Production Facilities**	§ 106.	
§ 106. **492 Flares**	§ 106.	
§ 106. **512 Stationary Engines and Turbines**	§ 106.	
Are you claiming a **historical standard exemption or PBR**?		☐ YES ☑ NO
If "YES," enter effective date and Rule Number:		
C. Is there a previous Standard Exemption or PBR for the facility in this registration? (Attach details regarding changes.)		☑ YES ☐ NO
If "YES," enter Registration Number and Rule Number:	87632	

154305
87632

Texas Commission on Environmental Quality
Form PI-7-CERT
Certification and Registration for Permits by Rule

II. FACILITY AND SITE INFORMATION *(continued)*			
D. Are there any **other facilities** at this **site** which are **authorized by an Air Standard Exemption or PBR**?			☐ YES ☑ NO
If "YES," enter Registration Number and Rule Number:			
E. Are there any **other air preconstruction permits** at this site?			☐ YES ☑ NO
If "YES," enter Permit Numbers:			
Are there any other air preconstruction permits at this site that would be directly associated with this project?			☐ YES ☑ NO
If "YES," enter Permit Numbers:			
F. Is this facility located at a site which is required to obtain a federal operating permit pursuant to 30 TAC Chapter 122?			☐ YES ☑ NO ☐ To be determined
If the site currently has an existing federal operating permit, enter the permit number:			
Identify the requirements of 30 TAC Chapter 122 that will be triggered if this certification is accepted.			
☐ Initial Application for an FOP	☐ Significant Revision for an SOP	☐ Minor Revision for an SOP	
☐ Operational Flexibility/off Permit Notification for an SOP	☐ Revision for GOP	☐ To be Determined	☑ None
Identify the type(s) issued and/or FOP application(s) submitted/pending for the site. *(Check all that apply)*			
☐ SOP	☐ GOP	☐ GOP application/revision application: Submitted or under APD review.	
☐ SOP application/revision application: submitted or under APD review.		☑ N/A	
G. TCEQ Account Identification Number *(if known)*:			
III. FEE INFORMATION			
See Section VI. for address to send fee or go to www.2.tceq.state.tx.us/epay to pay online.			
A. Is this certification to solely establish a federally enforceable emission limit and not authorize any new facilities? If "YES," than no fee is required. If "NO," then go to Section III.B.			☐ YES ☑ NO
B. *If "YES," to any of the following three questions, a **$100** fee is required. Otherwise, a **$450** fee is required.*			
Does this business have less than 100 employees?			☐ **YES** ☑ **NO**
Does this business have less than 6 million dollars in annual gross receipts?			☐ **YES** ☑ **NO**
Is this registration submitted by a governmental entity with a population of less than 10,000?			☐ **YES** ☑ **NO**
C. Check/Money Order or Transaction Number *(Payable to TCEQ)*:	57873	*Was fee **Paid** online?*	☑ **YES** ☐ **NO**
Company name of check: N/A	Fee amount:		$ $450.00

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JAN 28 2010

Texas Commission on Environmental Quality
Form PI-7-CERT
Certification and Registration for Permits by Rule

IV. SELECTED FACILITY REVIEWS ONLY—TECHNICAL INFORMATION		
Note: If claiming one of the following PBRs, complete this section, then skip to Section VI., "Submitting your registration" below:		
Animal Feeding Operations § 106.161, Livestock Auction Facilities § 106.162, Saw Mills § 106.223, Grain Handling, Storage and Drying § 106.283, Auto Body Refinishing Facilities §106.436, and Air Curtain Incinerator § 106.496		
A. Is the applicable PBR checklist attached which shows the facility meets all general and specific requirements of the PBR(s) being claimed? *(If submitting electronically, click "YES.")*		☐ YES ☐ NO
B. Distance from this facility's emission release point to the nearest property line:		feet
Distance from this facility's emission release point to the nearest off-property structure:		feet
V. TECHNICAL INFORMATION INCLUDING STATE AND FEDERAL REGULATORY REQUIREMENTS ***Registrants must be in compliance with all applicable state and federal regulations and standards to claim a PBR.***		
A. Is confidential information submitted and properly marked "**CONFIDENTIAL**" with this registration?		☐ YES ☑ NO
B. Is a process flow diagram or a process description attached?		☑ YES ☐ NO
C. Are emissions data and calculations for this claim attached?		☑ YES ☐ NO
D. Is information attached showing how the **general** requirements (**30 TAC § 106.4**) of the PBR is met for this Registration? (**PBR checklists** may be used, but are optional)		☑ YES ☐ NO
*Note: Please be reminded that if the facilities listed in this registration are subject to the Mass Emissions Cap & Trade program under **30 TAC Chapter 101, Subchapter H, Division 3**, the owner/operator of these facilities must possess NO_x allowances equivalent to the actual NO_x emissions from these facilities.*		
E. Is information attached showing how the **specific PBR** requirements are met for this registration? (***PBR checklist** may be used, but are optional*)		☑ YES ☐ NO
F. Distance from this facility's emission release point to the nearest property line:	>100	feet
Distance from this facility's emission release point to the nearest off-property structure:	>1000	feet
Note: In limited cases, a map or drawing of the site and surrounding land use may be requested during the technical review or at the request of the TCEQ Regional Office or local air pollution control program during an investigation.		

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TCEQ

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided)*

☒ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Attachments — Describe Any Attachments: *(ex. Title V Application, Waste Transporter Application, etc.)*

☒ Yes ☐ No — Permit by Rule Application

3. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	4. Regulated Entity Reference Number *(if issued)*
CN 601674351		RN 105698112

SECTION II: Customer Information

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JAN 28 2010
AIR PERMITS DIVISION

5. Effective Date for Customer Information Updates (mm/dd/yyyy): 1/18/2010

6. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check only one of the following:*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other: _____

7. General Customer Information

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State) ☒ No Change**

If "No Change" and Section I is complete, skip to Section III – Regulated Entity Information.

8. Type of Customer:			
☐ Corporation	☐ Individual	☐ Sole Proprietorship- D.B.A	
☐ City Government	☐ County Government	☐ Federal Government	☐ State Government
☐ Other Government	☐ General Partnership	☐ Limited Partnership	☐ Other:

9. Customer Legal Name *(If an individual, print last name first: ex: Doe, John)*	*If new Customer, enter previous Customer below*	*End Date:*

10. Mailing Address:							
City		State		ZIP		ZIP + 4	

11. Country Mailing Information *(if outside USA)*	12. E-Mail Address *(if applicable)*

13. Telephone Number	14. Extension or Code	15. Fax Number *(if applicable)*
( ) -		( ) -

16. Federal Tax ID *(9 digits)*	17. TX State Franchise Tax ID *(11 digits)*	18. DUNS Number *(if applicable)*	19. TX SOS Filing Number *(if applicable)*

20. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

21. Independently Owned and Operated?
☐ Yes ☐ No

SECTION III: Regulated Entity Information

22. General Regulated Entity Information *(If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information ☒ No Change** *(See below)*

**If "NO CHANGE" is checked and Section I is complete, skip to Section IV, Preparer Information.

23. Regulated Entity Name *(name of the site where the regulated action is taking place)*

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24. Street Address of the Regulated Entity: *(No P.O. Boxes)*							
	City		State		ZIP		ZIP + 4	
25. Mailing Address:							
	City		State		ZIP		ZIP + 4	
26. E-Mail Address:							
27. Telephone Number		28. Extension or Code		29. Fax Number *(if applicable)*			
( ) -				( ) -			
30. Primary SIC Code (4 digits)	31. Secondary SIC Code (4 digits)	32. Primary NAICS Code (5 or 6 digits)		33. Secondary NAICS Code (5 or 6 digits)			
34. What is the Primary Business of this entity? *(Please do not repeat the SIC or NAICS description.)*							

Questions 34 – 37 address geographic location. Please refer to the instructions for applicability.

35. Description to Physical Location:					
36. Nearest City		County		State	Nearest ZIP Code
37. Latitude (N) In Decimal:			38. Longitude (W) In Decimal:		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

39. **TCEQ Programs and ID Numbers** Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form or the updates may not be made. If your Program is not listed, check other and write it in. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Industrial Hazardous Waste	☐ Municipal Solid Waste
☐ New Source Review – Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS	☐ Sludge
☐ Stormwater	☐ Title V – Air	☐ Tires	☐ Used Oil	☐ Utilities
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Kate Branning	41. Title:	Staff Environmental Scientist
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(832) 486-2110		(918) 662-6171	Kate.K.Branning@conocophillips.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 9 and/or as required for the updates to the ID numbers identified in field 39.

(See the Core Data Form instructions for more information on who should sign this form.)

Company:	Conocophillips Company	Job Title:	Manager Production Operations - West
Name *(In Print)*:	Randall Black	Phone:	(361) 586-4050
Signature:		Date:	1/21/10

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JAN 28 2010

1.0 INTRODUCTION

ConocoPhillips Company (ConocoPhillips) operates a natural gas production facility known as the Sugarkane Central Battery 1 (Sugarkane Facility), near Pawnee in Live Oak County, Texas. The Sugarkane Facility is currently authorized under Permit by Rule (PBR) Registration Number 87632.

1.1 Purpose

The purpose of this application is to revise PBR Registration Number 87632 to incorporate an additional compressor driven by a 670 hp natural gas fired internal combustion engine, four 500 bbl condensate tanks, and associated components. In order to accommodate the aforementioned changes, ConocoPhillips would like to reduce the 20% safety factor represented in the PBR Registration Application dated March 5, 2009 to 10%. The associated Texas Commission on Environmental Quality (TCEQ) forms and emissions data are presented as shown in Section 1.2 below.

1.2 Document Organization

This Permit by Rule Registration package is organized in the following format:

- Section 2 - Process Description;
- Section 3 - Emission Summary;
- Section 4 - Regulatory Review;
- Section 5 - SCREEN3 Summary;
- Appendix A - TCEQ Forms and associated PBR Checklists;
- Appendix B - Plot Plan;
- Appendix C - New Emission Calculations;
- Appendix D - Emission Calculations (March 5, 2009);
- Appendix E - Engine Specifications;
- Appendix F - SCREEN3 Analysis; and
- Appendix G - EPAY Receipt.

2.0 PROCESS DESCRIPTION

The Sugarkane Facility receives production from several gas wells that flow continuously throughout the year. Produced gas flows through two separator systems where the hydrocarbon condensate and water are removed. Condensate liquids from the low pressure separators will flow to one of ten condensate storage tanks. Produced water flows to a water storage tank. Liquids from two JATCO units, the two fuel scrubbers, and two discharge compressor scrubbers will flow to a common slop tank. Liquids are removed from the site via tank truck, resulting in VOC emissions from truck loading.

Tank and loading emissions are vented to a vapor recovery unit (VRU) with 95% control, which accounts for 5% VRU downtime. During VRU downtime, the vapors are routed to a flare with 98% destruction efficiency.

The natural gas product from the low pressure separator is compressed with a compressor driven by a 633 hp natural gas fired internal combustion engine and a compressor driven by a 670 hp natural gas fired internal combustion engine. During compressor downtime, low-pressure gas will be sent to a flare with 98% destruction efficiency.

There are two additional condensate tanks installed on site but are out of service.

Fugitive emissions may occur from valves, flanges, compressor seals, and other components.

3.0 EMISSION SUMMARY

This section includes a discussion of the calculation methodology used to determine facility emissions. Detailed calculations pertaining to this PBR Registration Application are included in Appendix C. The calculations relating to the existing facility are included as Appendix D of this application.

3.1 Site-Wide Emissions

Emissions associated with the operation of this engine were estimated using EPA-approved guidance. Engine manufacturer's specifications are included in Appendix E. A summary of site-wide emissions resulting from the operation of the facility is included as Table 3-1.

Table 3-1

Emissions Summary

Description (FIN)	PM_{10}		VOC		NOx		CO		SO_2		H_2S		HAPs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
*Total Existing Facility Emissions	0.059	0.261	3.654	16.308	11.637	14.193	51.426	25.110	0.333	0.135	0.004	0.002	0.414	1.836
Condensate Tank 7 (T-7)	-	-	0.000	0.033	-	-	-	-	-	-	0.000	0.000	0.000	0.001
Condensate Tank 8 (T-8)	-	-	0.000	0.033	-	-	-	-	-	-	0.000	0.000	0.000	0.001
Condensate Tank 9 (T-9)	-	-	0.000	0.033	-	-	-	-	-	-	0.000	0.000	0.000	0.001
Condensate Tank 10 (T-10)	-	-	0.000	0.033	-	-	-	-	-	-	0.000	0.000	0.000	0.001
Compressor Emissions (C-2)	0.061	0.269	1.625	7.117	3.250	14.233	6.499	28.467	0.293	0.320	-	-	0.558	2.443
Additional Flare Emissions from C-2 (F1MSS-VRU)	0.012	0.017	-	-	0.101	0.001	0.865	0.005	0.001	0.000	-	-	-	-
Fugitive Emissions (FUG)	-	-	0.082	0.361	-	-	-	-	-	-	-	-	-	-
Total	**0.132**	**0.546**	**5.363**	**23.918**	**14.988**	**28.427**	**58.791**	**53.582**	**0.626**	**0.455**	**0.004**	**0.002**	**0.972**	**4.282**

*Changed 20% Safety Factor Represented in Permit by Rule Application Dated March 5, 2009 to 10% Safety Factor

Table 1
ConocoPhillips Company
Emissions Summary
Sugarkane Central Battery 1

Table 3-1

Emissions Summary

Description	PM_{10}		VOC		NOx		CO		SO_2		H_2S		HAPs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
*Total Existing Facility Emissions	0.059	0.261	3.654	16.308	11.637	14.193	51.426	25.110	0.333	0.135	0.004	0.002	0.414	1.836
Compressor Emissions (C-2)	0.061	0.269	1.625	7.117	3.250	14.233	6.499	28.467	0.293	0.320	-	-	0.558	2.443
Additional Flare Emissions (F1MSS-VRU)	0.012	0.017	0.000	0.132	0.101	0.001	0.865	0.005	0.001	0.000	0.000	0.000	0.000	0.004
Fugitive Emissions (FUG)	-	-	0.082	0.361	-	-	-	-	-	-	-	-	-	-
Total	**0.132**	**0.546**	**5.361**	**23.918**	**14.988**	**28.427**	**58.791**	**53.582**	**0.626**	**0.455**	**0.004**	**0.002**	**0.972**	**4.283**

*Changed 20% Safety Factor Represented in Permit by Rule Application Dated March 5, 2009 to 10% Safety Factor

3.2 Tank Emissions

The emissions for the condensate tanks T-1, T-2, T-3, T-4, T-5, and T-6 were calculated in the PBR Registration Application dated March 5, 2009 and are included in Appendix D. As T-7, T-8, T-9, and T-10 are exactly the same as the aforementioned tanks; they will have the same emissions as represented in the previous PBR Registration Application.

3.3 Compressor Emissions

Compressor engine emission calculations are based on project-specific vendor data and emission factors from AP-42 Chapter 3.2 Table 3.2-2. Annual emission rates are based on the maximum rated engine capacity and 8,760 hours per year of operation. As the vendor data in Appendix E shows, the total hydrocarbon emission rate for THC is 3.04 g/bhp-hr. The VOC composition of the gas fueling the engine is approximately 15%, making the VOC emission rate approximately 0.456 g/bhp-hr. To be conservative, ConocoPhillips is requesting authorization for a VOC emission rate of 1 g/bhp-hr. ConocoPhillips would also like to adjust the NOx and CO factors from 1.5 g/bhp-hr and 1.84 g/bhp-hr to 2 g/bhp-hr and 4 g/bhp-hr, respectfully to match the maximum allowable emission rate allowed for by New Source Performance Standard (NSPS) JJJJ.

The short term and long term SO_2 emission representations were based on 20 grains of total sulfur per 100 scf, and 5 grains of total sulfur per 100 scf, respectively, for conservatism.

3.4 Flare Emissions

Due to the addition of the four condensate tanks, additional VOC emissions from standing and breathing losses will be burned by the flare (F1MSS-VRU) during the 5% VRU downtime. This application reflects only F1MSS-VRU as it is the only flare affected by the changes listed in Section 1. F2MSS-BDWN is addressed in the previous application.

The NOx and CO emissions from flare waste combustion were calculated using *TCEQ Technical Guidance Chemical Sources – Flares and Vapor Oxidizers* (Draft RG-109). The SO_2 and PM10 emissions from flare waste combustion were calculated using emission factors from USEPA Compilation of Air Pollution Emission Factors (AP-42) Chapter 1.3 Table 1.3-2.

3.5 Fugitive Emissions

Fugitive emissions for the site were calculated using the emission factors taken from the TCEQ Technical Guidance Document "Fugitive Emissions – Equipment Leak Fugitives" dated October 2000 for Oil and Gas Production Operations. The VOC fraction of total hydrocarbons was calculated using EPA emission factors for Gas & Light Oil,

"Calculation Notebook for Oil and Gas Production Equipment Fugitive Emissions" API Publication No. 4638, April 1996, page 15. The emissions and associated calculations are included in Table 4 in Appendix C and includes a 10% safety factor.

EQUIPMENT		
TAG #	DESCRIPTION	P&ID
CP-14100	COMPRESSOR #1	SCB1-11141
~~CP-14301~~	COMPRESSOR #2	SCB1-11143
CP-14200	VRU SKID	SCB1-11142
FLR-15203	TANK FLARE	SCB1-11153
FLR-15302	LP SEPARATOR FLARE	SCB1-11153
P-15103A	RECIRCULATING PUMP	BFT1-11151
P-15103B	RECIRCULATING PUMP	BFT2-11151
P-15103C	RECIRCULATING PUMP	NO1-11151
P-15103D	RECIRCULATING PUMP	EW1-11151
~~PV-13401~~	INLET SEPARATOR	SCB1-11131
PV-13101A	HP SEPARATOR	BFT1-11131
PV-13101B	HP SEPARATOR	BFT2-11131
PV-13101C	HP SEPARATOR	NO1-11131
PV-13101D	HP SEPARATOR	EW1-11131
~~PV-13302~~	DISCHARGE SEPARATOR	SCB1-11132
PV-13201A	LP SEPARATOR	BFT1-11132
PV-13201B	LP SEPARATOR	BFT2-11132
PV-13201C	LP SEPARATOR	NO1-11132
PV-13201D	LP SEPARATOR	EW1-11132
PV-13301	COMPR. DISCHARGE SEPARATOR	SCB1-11133
PV-14107	JAYCO TANK	SCB1-11141
~~PV-21102~~	FUEL GAS KNOCKOUT	SCB1-11143
PV-16202	JAYCO TANK	SCB1-11153
PV-21101	FUEL GAS SCRUBBER	SCB1-11211
T-14108	OIL TANK	SCB1-11141
T-14109	COOLANT TANK	SCB1-11141
T-15101A	OIL TANK	BFT1-11151
T-15102A	OIL TANK	BFT1-11151
T-15102B	OIL TANK	BFT2-11151
T-15101B	OIL TANK	BFT2-11151
T-15102C	OIL TANK	NO1-11151
T-15101C	OIL TANK	NO1-11151
T-15101D	OIL TANK	EW1-11151
T-15102D	OIL TANK	EW1-11151
T-15401	WATER TANK	SCB1-11154
T-15402	SLOP TANK	SCB1-11154
T-22101	CHEMICAL INJECTION TANK	SCB1-11221
T-22101A	CHEMICAL INJECTION TANK	BFT1-11221
T-22102	CHEMICAL INJECTION TANK	SCB1-11221
T-22102A	CHEMICAL INJECTION TANK	BFT1-11221
T-22201	CHEMICAL INJECTION TANK	SCB1-11222
WH-11108A	WELL HEAD	BFT1-11111

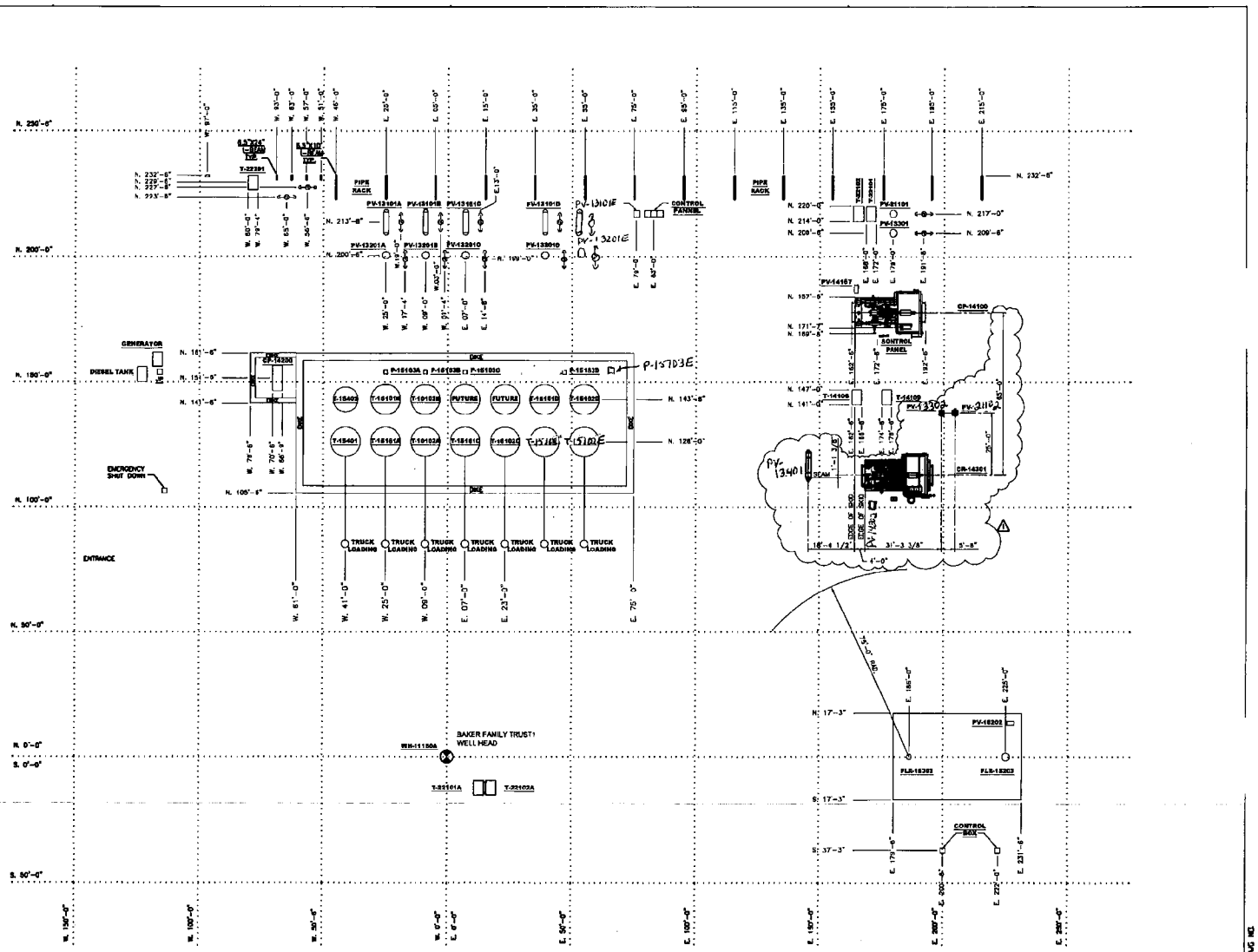
T-15101E	OIL TANK	BFT3-11151
T-15102E	OIL TANK	BFT3-11151
PV-13101E	HP SEPARATOR	BFT3-11131
PV-13201E	LP SEPARATOR	BFT3-11132
P-15103E	RECIRC PUMP	BFT3-11151

CP-14301

PV-13401

PV-13302

PV-21102



NO.	DATE	REVISION	DRV.	DES.	CHK.	APP.
1	11/02/09	ISSUED FOR CONSTRUCTION	AA			KD
0	06/26/09	ISSUED FOR AS BUILT	AA			

REFERENCE DRAWINGS

APPROVED
JAN 28 2010

ConocoPhillips
SOUTH TEXAS BUSINESS UNIT

PLOT PLAN
SUGAR KANE CENTRAL BATTERY 1

SCALE: 1"=20'
AFE:
PLOT SCALE: [=]
LOCATION: LIVE OAK CO., TX
DWG. NO: SCB1-20001
REV: 1

EFSCOP00004330

Table 2
ConocoPhillips Company
Compressor Emission Calculations
Sugarkane Central Battery 1
Uncontrolled Emissions

Fuel Consumption
5.03 MMBtu/hr, LHV
5.58 MMBtu/hr, HHV
0.005 MMcf/hr
0.11 MMcf/day
40.77 MMcf/yr

Exhaust Flow
4,088 acfm

Exhaust Velocity
124.9 ft/sec

Brake-Specific Fuel Consumption
7,510 Btu/bhp-hr

Operating Schedule
8,760 hr/yr

Engine Output
670 bhp

Stack Inner Diameter
10 inches

Number of Engines
1

Fuel Heating Value
1,081 Btu/cf LHV
1,199 Btu/cf HHV

Exhaust Temperature
985 F

Pollutant	Emission Factor				Emissions (1 engine)		Emissions (1 engines) (10%)	
	lb/MMBtu	kg/MMBtu	g/bhp-hr	Ref	lb/hr	ton/yr	lb/hr	ton/yr
$PM_{2.5}$	9.99E-03	-	-	1, 2	0.06	0.24	0.06	0.27
PM_{10}	9.99E-03	-	-	1, 2	0.06	0.24	0.06	0.27
SO_2 - short term	4.77E-02	-	-	6	0.27	-	0.29	-
SO_2 - long term	1.19E-02	-	-	7	-	0.29	-	0.32
NO_x	-	-	2.00	3	2.95	12.94	3.25	14.23
CO	-	-	4.00	3	5.91	25.88	6.50	28.47
VOC		-	1.00	3	1.48	6.47	1.62	7.12
CO_2	-	5.28E+01	-	4	649.31	2,843.98	714.24	3128.38
CH_4	-	5.90E-03	-	4	0.07	0.32	0.08	0.35
N_2O	-	1.00E-04	-	4	1.23E-03	5.39E-03	1.35E-03	5.93E-03
1,1,2,2-Tetrachloroethane	< 4.00E-05	-	-	1	2.23E-04	9.78E-04	2.46E-04	1.08E-03
1,1,2-Trichloroethane	< 3.18E-05	-	-	1	1.77E-04	7.77E-04	1.95E-04	8.55E-04
1,3-Butadiene	2.67E-04	-	-	1	1.49E-03	6.53E-03	1.64E-03	7.18E-03
1,3-Dichloropropene	< 2.64E-05	-	-	1	1.47E-04	6.45E-04	1.62E-04	7.10E-04
2-Methylnaphthalene	3.32E-05	-	-	1	1.85E-04	8.11E-04	2.04E-04	8.93E-04
2,2,4-Trimethylpentane	2.50E-04	-	-	1	1.40E-03	6.11E-03	1.53E-03	6.72E-03
Acenaphthene	1.25E-06	-	-	1	6.98E-06	3.06E-05	7.67E-06	3.36E-05
Acenaphthylene	5.53E-06	-	-	1	3.09E-05	1.35E-04	3.39E-05	1.49E-04
Acetaldehyde	8.36E-03	-	-	1	4.67E-02	2.04E-01	5.13E-02	2.25E-01
Acrolein	5.14E-03	-	-	1	2.87E-02	1.26E-01	3.16E-02	1.38E-01
Benzene	4.40E-04	-	-	1	2.46E-03	1.08E-02	2.70E-03	1.18E-02
Benzo(b)fluoranthene	1.66E-07	-	-	1	9.26E-07	4.06E-06	1.02E-06	4.46E-06
Benzo(e)pyrene	4.15E-07	-	-	1	2.32E-06	1.01E-05	2.55E-06	1.12E-05
Benzo(g,h,i)perylene	4.14E-07	-	-	1	2.31E-06	1.01E-05	2.54E-06	1.11E-05
Biphenyl	2.12E-04	-	-	1	1.18E-03	5.18E-03	1.30E-03	5.70E-03
CarbonTetrachloride	< 3.67E-05	-	-	1	2.05E-04	8.97E-04	2.25E-04	9.87E-04
Chlorobenzene	< 3.04E-05	-	-	1	1.70E-04	7.43E-04	1.87E-04	8.17E-04
Chloroform	< 2.85E-05	-	-	1	1.59E-04	6.97E-04	1.75E-04	7.66E-04
Chrysene	6.93E-07	-	-	1	3.87E-06	1.69E-05	4.25E-06	1.86E-05
Ethylbenzene	3.97E-05	-	-	1	2.22E-04	9.70E-04	2.44E-04	1.07E-03
Ethylene Dibromide	< 4.43E-05	-	-	1	2.47E-04	1.08E-03	2.72E-04	1.19E-03
Fluoranthene	1.11E-06	-	-	1	6.19E-06	2.71E-05	6.81E-06	2.98E-05
Fluorene	5.67E-06	-	-	1	3.16E-05	1.39E-04	3.48E-05	1.52E-04
Methanol	2.50E-03	-	-	1	1.40E-02	6.11E-02	1.53E-02	6.72E-02
Methylene Chloride	2.00E-05	-	-	1	1.12E-04	4.89E-04	1.23E-04	5.38E-04
n-Hexane	1.11E-03	-	-	1	6.19E-03	2.71E-02	6.81E-03	2.98E-02

Table 2
Compressor Emission Calculations
Sugarkane Central Battery 1
Uncontrolled Emissions
(continued)

Pollutant	Emission Factor				Emissions (1 engine)		Emissions (1 engines) (10%)	
	lb/MMBtu	kg/MMBtu	g/bhp-hr	Ref	lb/hr	ton/yr	lb/hr	ton/yr
Naphthalene	7.44E-05	-	-	1	4.15E-04	1.82E-03	0.00	0.00
PAH	2.69E-05	-	-	1	1.50E-04	6.57E-04	1.65E-04	7.23E-04
Phenanthrene	1.04E-05	-	-	1	5.80E-05	2.54E-04	6.38E-05	2.80E-04
Phenol	2.40E-05	-	-	1	1.34E-04	5.87E-04	1.47E-04	6.45E-04
Pyrene	1.36E-06	-	-	1	7.59E-06	3.32E-05	8.35E-06	3.66E-05
Styrene	< 2.36E-05	-	-	1	1.32E-04	5.77E-04	1.45E-04	6.34E-04
Tetrachloroethane	2.48E-06	-	-	1	1.38E-05	6.06E-05	1.52E-05	6.67E-05
Toluene	4.08E-04	-	-	1	2.28E-03	9.97E-03	2.50E-03	1.10E-02
Vinyl Chloride	1.49E-05	-	-	1	8.31E-05	3.64E-04	9.15E-05	4.01E-04
Xylene	1.84E-04	-	-	1	1.03E-03	4.50E-03	1.13E-03	4.95E-03
Formaldehyde	-	-	0.270	3	0.40	1.75	0.44	1.92
Other HAP6	1.94E-02	-	-	1	0.11	0.47	0.12	0.52
Total HAP		-	-		0.51	2.22	0.56	2.44

Reference:

1. Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Table 3.2-2
2. Filterable plus condensable
3. Based on vendor data
4. California Climate Action Registry General Reporting Protocol, Version 2.2, March 2007, Tables C.5 & C.6
5. Hazardous air pollutants other than formaldehyde
6. Based on 20 grains sulfur/100 scf of natural gas
7. Based on 5 grains sulfur/100 scf of natural gas

ConocoPhillips Company
SCREEN3 Modeling Results

EPN	DESCRIPTION	POLLUTANT	EMISSION RATE	MAX 1-HOUR IMPACT	1-Hour NAAQS Standard	3-HOUR IMPACT	****3-Hour NAAQS Standard	8-HOUR IMPACT	8-Hour NAAQS Standard	24-HOUR IMPACT	24-Hour NAAQS Standard	ANNUAL IMPACT	Annual NAAQS Standard
			(LBS/HR)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
		CONVERSION FACTOR		1.00		0.9		0.7		0.4		0.08	
		GENERIC	7.94	134.80		121.32		94.36		53.92		10.78	
C-1	Compressor 1												
		VOC	0.473	8.03	N/A	7.23	N/A	5.62	N/A	3.21	N/A	0.64	N/A
		$PM_{2.5}/PM_{10}$	0.061	1.03	N/A	0.92	N/A	0.72	N/A	0.41	35.00	0.08	15.0
		SO2	0.024	0.41	N/A	0.37	1,300.00	0.29	N/A	0.16	364.00	0.03	78.0
		NOX	3.069	52.10	N/A	46.89	N/A	36.47	N/A	20.84	N/A	1.67	100.0
		CO	4.609	78.25	40,000.00	70.42	N/A	54.77	10,000.00	31.30	N/A	6.26	N/A
		HAP	0.286	4.86	N/A	4.37	N/A	3.40	N/A	1.94	N/A	0.39	N/A
		CONVERSION FACTOR		1.00		0.9		0.7		0.4		0.08	
		GENERIC	7.94	126.40		121.32		94.36		53.92		10.78	
C-2	Compressor 2												
		VOC	1.625	25.87	N/A	23.28	N/A	18.11	N/A	10.35	N/A	2.07	N/A
		$PM_{2.5}/PM_{10}$	0.123	1.95	N/A	1.76	N/A	1.37	N/A	0.78	35.00	0.16	15.0
		SO2	0.293	4.66	N/A	4.19	1,300.00	3.26	N/A	1.86	364.00	0.37	78.0
		NOX	3.250	51.73	N/A	46.56	N/A	36.21	N/A	20.69	N/A	1.66	100.0
		CO	6.499	103.46	40,000.00	93.12	N/A	72.43	10,000.00	41.39	N/A	8.28	N/A
		HAP	0.558	8.88	N/A	7.99	N/A	6.22	N/A	3.55	N/A	0.71	N/A
Cumulative Impacts													
		VOC		33.90	N/A	30.51	N/A	23.73	N/A	13.56	N/A	2.71	N/A
		$PM_{2.5}/PM_{10}$		2.98	N/A	2.68	N/A	2.09	N/A	1.19	35.00	0.24	15.00
		SO2		5.07	N/A	4.56	1,300.00	3.55	N/A	2.03	364.00	0.41	78.00
		NOX		103.84	N/A	93.45	N/A	72.68	N/A	41.53	N/A	3.32	100.00
		CO		181.71	40,000.00	163.54	N/A	127.20	10,000.00	72.69	N/A	14.54	N/A
		HAP		13.74	N/A	12.36	N/A	9.61	N/A	5.49	N/A	1.10	N/A
					Total NOx:							3.32	
					Background Concentration for County:							20.00	
					Cumulative Total:							23.32	100.0

*Nitrogen Dioxide (NO2)/NOx ratio of (0.15+(0.5/2)) applied for IC Engine with a NOx Emission Rate 2-10 g/hp-hr per 30 TAC 106.512(6)(A), Figure 1
**Background Concengration = 20 ug/m^3 for Region 16
***Notes max allowable concentrations for PM2.5 as they are more stringent than concentrations for PM10.
****Secondary Standards

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C-1 Sugarkane 1-11-10

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	1.00000
STACK HEIGHT (M)	=	5.1800
STK INSIDE DIAM (M)	=	.2540
STK EXIT VELOCITY (M/S)	=	33.4373
STK GAS EXIT TEMP (K)	=	725.9300
AMBIENT AIR TEMP (K)	=	293.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	.0000
MIN HORIZ BLDG DIM (M)	=	.0000
MAX HORIZ BLDG DIM (M)	=	.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 3590.0000 (ACFM)

BUOY. FLUX = 3.154 M**4/S**3; MOM. FLUX = 7.278 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	320.0	55.89	1.62	1.58	NO
100.	134.1	3	10.0	10.0	3200.0	10.25	12.55	7.58	NO
200.	121.4	4	8.0	8.0	2560.0	11.52	15.67	8.69	NO
300.	105.1	4	5.0	5.0	1600.0	15.32	22.80	12.44	NO
400.	89.44	4	4.0	4.0	1280.0	17.86	29.68	15.69	NO
500.	77.83	4	3.0	3.0	960.0	22.08	36.47	18.92	NO
600.	68.70	4	2.5	2.5	800.0	25.46	43.11	21.99	NO
700.	61.18	4	2.5	2.5	800.0	25.46	49.53	24.72	NO
800.	55.86	4	2.0	2.0	640.0	30.53	56.04	27.74	NO
900.	50.74	4	2.0	2.0	640.0	30.53	62.31	30.34	NO
1000.	46.78	4	1.5	1.5	480.0	38.98	68.81	33.51	NO
MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:									
95.	134.8	3	10.0	10.0	3200.0	10.25	12.08	7.31	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
* SUMMARY OF TERRAIN HEIGHTS ENTERED FOR *

```
*    SIMPLE ELEVATED TERRAIN PROCEDURE     *
*******************************************

      TERRAIN        DISTANCE RANGE (M)
       HT (M)       MINIMUM     MAXIMUM
      -------      --------    --------
           0.            1.       1000.

     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************

 CALCULATION         MAX CONC    DIST TO   TERRAIN
   PROCEDURE        (UG/M**3)    MAX (M)    HT (M)
--------------    -----------   -------   -------
SIMPLE TERRAIN       134.8           95.       0.

**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
```

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C-2 Sugarkane

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	1.00000
STACK HEIGHT (M)	=	5.2700
STK INSIDE DIAM (M)	=	.2540
STK EXIT VELOCITY (M/S)	=	33.4373
STK GAS EXIT TEMP (K)	=	802.5900
AMBIENT AIR TEMP (K)	=	293.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	.0000
MIN HORIZ BLDG DIM (M)	=	.0000
MAX HORIZ BLDG DIM (M)	=	.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 3590.0000 (ACFM)

BUOY. FLUX = 3.358 M**4/S**3; MOM. FLUX = 6.583 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	320.0	58.42	1.57	1.53	NO
100.	126.3	3	10.0	10.0	3200.0	10.58	12.55	7.59	NO
200.	114.3	4	8.0	8.0	2560.0	11.91	15.68	8.71	NO
300.	99.26	4	5.0	5.0	1600.0	15.90	22.81	12.47	NO
400.	84.95	4	4.0	4.0	1280.0	18.56	29.70	15.73	NO
500.	73.58	4	3.0	3.0	960.0	22.99	36.50	18.98	NO
600.	64.92	4	2.5	2.5	800.0	26.53	43.15	22.06	NO
700.	58.45	4	2.5	2.5	800.0	26.53	49.56	24.79	NO
800.	52.99	4	2.0	2.0	640.0	31.84	56.09	27.84	NO
900.	48.52	4	2.0	2.0	640.0	31.84	62.35	30.43	NO
1000.	44.17	4	2.0	2.0	640.0	31.84	68.55	32.98	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

98.	126.4	3	10.0	10.0	3200.0	10.58	12.43	7.52	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
* SUMMARY OF TERRAIN HEIGHTS ENTERED FOR *

```
*    SIMPLE ELEVATED TERRAIN PROCEDURE     *
*******************************************

      TERRAIN        DISTANCE RANGE (M)
       HT (M)       MINIMUM     MAXIMUM
      -------      --------    --------
          0.            1.       1000.

     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************

 CALCULATION         MAX CONC    DIST TO   TERRAIN
  PROCEDURE         (UG/M**3)    MAX (M)    HT (M)
--------------     -----------   -------   -------
SIMPLE TERRAIN       126.4          98.        0.

**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
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APPENDIX G

EPAY RECEIPT

Texas Commission on Environmental Quality
Permit by Rule Applicability Checklist
Title 30 Texas Administrative Code § 106.4

The following checklist was developed by the Texas Commission on Environmental Quality (TCEQ), **Air Permits Division**, to assist applicants in determining whether or not a facility meets all of the applicable requirements. Before claiming a specific Permit by Rule (PBR), a facility must first meet all of the requirements of **Title 30 Texas Administrative Code § 106.4** (30 TAC § 106.4), "Requirements for Permitting by Rule." Only then can the applicant proceed with addressing requirements of the specific Permit by Rule being claimed.

The use of this checklist is not mandatory; however, it is the responsibility of each applicant to show how a facility being claimed under a PBR meets the general requirements of 30 TAC § 106.4 and also the specific requirements of the PBR being claimed. If all PBR requirements cannot be met, a facility will not be allowed to operate under the PBR and an application for a construction permit may be required under 30 TAC § 116.110(a).

Registration of a facility under a PBR can be performed by completing **Form PI-7** (Registration for Permits by Rule) or **Form PI-7-CERT** (Certification and Registration for Permits by Rule). The appropriate checklist should accompany the registration form. Check the most appropriate answer and include any additional information in the spaces provided. If additional space is needed, please include an extra page and reference the question number. The PBR forms, tables, checklists and guidance documents are available from the TCEQ, Air Permits Division Web site at: **www.tceq.state.tx.us/permitting/air/nav/air_pbr.html**.

1. 30 TAC § 106.4(a)(1) & (4): Emission limits

List emissions in tpy for **each** facility (add additional pages or table if needed):

	SO_2	PM_{10}	VOC	NO_x	CO	Other	=
	0.455	0.546	23.918	28.427	58.791	HAPs	4.282
Total	0.455	0.546	23.918	28.427	58.791		4.282

- Are the SO_2, PM_{10}, VOC, or other air contaminant emissions claimed for **each** facility in this PBR submittal less than 25 tpy? ☑ YES ☐ NO
- Are the NO_x and CO emissions claimed for each facility in this PBR submittal less than 250 tpy? ☑ YES ☐ NO

*If the answer to both is "Yes," continue to the question below. If the answer to either question is "No," a **PBR cannot be claimed**.*

Has any facility at the property had public notice and opportunity for comment under 30 TAC Section 116 for a regular permit or permit renewal? (This does not include public notice for voluntary emission reduction permits, grandfathered existing facility permits, or federal operating permits.) ☐ YES ☑ NO

If "Yes," skip to Section 2. If "No," continue to the questions below.

If the site has had no public notice, please answer the following:

- Are the SO_2, PM_{10}, VOC, or other emissions claimed for **all** facilities in this PBR submittal less than 25 tpy? ☑ YES ☐ NO
- Are the NO_x and CO emissions claimed for all facilities in this PBR submittal less than 250 tpy? ☑ YES ☐ NO

If the answer to both questions is "Yes," continue to Section 2.
*If the answer to either question is "No," **a PBR cannot be claimed**. A permit will be required under Chapter 116.*

2. 30 TAC § 106.4(a)(2): Nonattainment check

Are the facilities to be claimed under this PBR located in a designated ozone nonattainment county? ☐ YES ☑ NO

If "Yes," please indicate which county by checking the appropriate box to the right.

(Marginal) - Hardin, Jefferson, and Orange counties *(BPA)* ☐ BPA
(Moderate) - Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties *(HGA)* ☐ HGA
(Moderate) - Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant counties *(DFW)* ☐ DFW

If "Yes," to any of the above, continue to the next question. If "No," continue to Section 3.

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Does this project trigger a nonattainment review? To determine the answer, review the information below: • Is the project's potential to emit (PTE) for emissions of VOC or NO_x increasing by 100 tpy or more? *PTE is the maximum capacity of a stationary source to emit any air pollutant under its worst-case physical and operational design unless limited by a permit, rule, or made federally enforceable by a certification.* • Is the site an existing major nonattainment site and are the emissions of VOC or NO_x increasing by 40 tpy or more? If needed, attach contemporaneous netting calculations per nonattainment guidance. Additional information can be found at: **www.tceq.state.tx.us/permitting/air/forms/newsourcereview/tables/nsr_table8.html** and **www.tceq.state.tx.us/permitting/air/nav/air_docs_newsource.html** *If "Yes," to any of the above, the project is a major source or a major modification and* ***a PBR may not be used****. A Nonattainment Permit review must be completed to authorize this project. If "No," continue to Section 3.*	☐ YES ☐ NO ☐ YES ☐ NO
3. 30 TAC § 106.4(a)(3): Prevention of Significant Deterioration (PSD) check	
Does this project trigger a review under PSD rules? To determine the answer, review the information below: • Are emissions of any regulated criteria pollutant increasing by 100 tpy of any criteria pollutant at a named source? • Are emissions of any criteria pollutant increasing by 250 tpy of any criteria pollutant at an unnamed source? • Are emissions increasing above significance levels at an existing major site? PSD information can be found at: **www.tceq.state.tx.us/permitting/air/forms/newsourcereview/tables/nsr_table9.html** and **www.tceq.state.tx.us/permitting/air/nav/air_docs_newsource.html** *If "Yes," to any of the above,* ***a PBR may not be used****. A PSD Permit review must be completed to authorize the project. If "No," continue to Section 4.*	☐ YES ☑ NO ☐ YES ☑ NO ☐ YES ☑ NO
4. 30 TAC § 106.4(a)(6): Federal Requirements	
• Will all facilities under this PBR meet applicable requirements of Title 40 Code of Federal Regulations (40 CFR) Part 60, New Source Performance Standards (NSPS)? If "Yes," which Subparts are applicable?: JJJJ Stationary Spark Ignition Internal Combustion Engines • Will all facilities under this PBR meet applicable requirements of 40 CFR Part 63, Hazardous Air Pollutants Maximum Achievable Control Technology (MACT) standards? If "Yes," which Subparts are applicable?: ZZZZ Stationary Reciprocating Internal Combustion Engines • Will all facilities under this PBR meet applicable requirements of 40 CFR Part 61, National Emissions Standards for Hazardous Air Pollutants (NESHAPs)? If "Yes," which Subparts are applicable?: *If "Yes" to any of the above, please attach a discussion of how the facilities will meet any applicable standards.*	☑ YES ☐ NO ☐ N/A ☑ YES ☐ NO ☐ N/A ☐ YES ☐ NO ☑ N/A
5. 30 TAC § 106.4(a)(7): PBR prohibition check	
Are there any air permits at the site containing conditions which prohibit or restrict the use of PBRs? *If "Yes," PBRs may not be used or their use must meet the restrictions of the permit. A new permit or permit amendment may be required.* ***List permit number(s):***_____ *If "No," continue to Section 6.*	☐ YES ☑ NO

6. 30 TAC § 106.4(a)(8): NO_x Cap and Trade	
• Is the facility located in Harris, Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery, or Waller County? *If "Yes," answer the question below. If "No," continue to Section 7.*	☐YES ☑NO
• Will the proposed facility or group of facilities obtain required allowances for NO_x if they are subject to 30 TAC Chapter 101, Subchapter H, Division 3 (relating to the Mass Emissions Cap and Trade Program)?	☐YES ☐NO

7. Highly Reactive Volatile Organic Compounds (HRVOC) check			
• Is the facility located in Harris County? *If "Yes," answer the next question. If "No," skip to the box below.*			☐YES ☑NO
• Will the project be constructed after June 1, 2006? *If "Yes," answer the next question. If "No," skip to the box below.*			☐YES ☐NO
• Will one or more of the following HRVOC be emitted as a part of this project?			☐YES ☐NO
If "Yes," complete the information below:	lb/hr	tpy	
▸ 1,3-butadiene			
▸ all isomers of butene (e.g., isobutene [2-methylpropene or isobutylene])			
▸ alpha-butylene (ethylethylene)			
▸ beta-butylene (dimethylethylene, including both cis- and trans-isomers)			
▸ ethylene			
▸ propylene			
• Is the facility located in Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery, or Waller County? *If "Yes," answer the next question. If "No," the checklist is complete.*			☐YES ☑NO
• Will the project be constructed after June 1, 2006? *If "Yes," answer the next question. If "No," the checklist is complete.*			☐YES ☐NO
• Will one or more of the following HRVOC be emitted as a part of this project?			☐YES ☐NO
If "Yes," complete the information below:	lb/hr	tpy	
▸ ethylene			
▸ propylene			

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4.0 REGULATORY REVIEW

4.1 Permit By Rule 30 TAC §106.4

The requirements for claiming this PBR are duplicated below in plain type. The ConocoPhillips documentation of compliance with these requirements is in **bold type.**

(a) To qualify for a permit by rule, the following general requirements must be met.

(1) Total actual emissions authorized under permit by rule from the facility shall not exceed 250 tons per year (tpy) of carbon monoxide (CO) or nitrogen oxides (NO_x); or 25 tpy of volatile organic compounds (VOC) or sulfur dioxide (SO_2) or inhalable particulate matter (PM_{10}); or 25 tpy of any other air contaminant except carbon dioxide, water, nitrogen, methane, ethane, hydrogen, and oxygen.

The Sugarkane Facility meets the requirements of this part as shown in Table 3-1 of this application. Emission calculations are included in Appendix C.

(2) Any facility or group of facilities, which constitutes a new major stationary source, as defined in §116.12 of this title (relating to Nonattainment Review Definitions), or any modification which constitutes a major modification, as defined in §116.12 of this title, under the new source review requirements of the Federal Clean Air Act (FCAA), Part D (Nonattainment) as amended by the FCAA Amendments of 1990, and regulations promulgated thereunder, must meet the permitting requirements of Chapter 116, Subchapter B of this title (relating to New Source Review Permits) and cannot qualify for a permit by rule under this chapter. Persons claiming a permit by rule under this chapter should see the requirements of §116.150 of this title (relating to New Major Source or Major Modification in Ozone Nonattainment Areas) to ensure that any applicable netting requirements have been satisfied.

The Sugarkane Facility does not constitute a major source nor does it constitute a major modification.

(3) Any facility or group of facilities, which constitutes a new major stationary source, as defined in 40 Code of Federal Regulations (CFR) §52.21, or any change which constitutes a major modification, as defined in 40 CFR §52.21, under the new source review requirements of the FCAA, Part C (Prevention of Significant Deterioration) as amended by the FCAA Amendments of 1990, and regulations promulgated thereunder, must meet the permitting requirements of Chapter 116, Subchapter B of this title and cannot qualify for a permit by rule under this chapter.

The Sugarkane Facility does not constitute a major source nor does it constitute a major modification.

(4) Unless at least one facility at an account has been subject to public notification and comment as required in Chapter 116, Subchapter B or Subchapter D of this title (relating to New Source Review Permits or Permit Renewals), total actual emissions from all facilities permitted by rule at an account shall not exceed 250 tpy of CO or NO_x; or 25 tpy of VOC or SO_2 or PM_{10}; or 25 tpy of any other air contaminant except carbon dioxide, water, nitrogen, methane, ethane, hydrogen, and oxygen.

The Sugarkane Facility meets the requirements of this part as shown in Table 3-1 of this application. The emission calculations are included in Appendix C.

(5) Construction or modification of a facility commenced on or after the effective date of a revision of this section or the effective date of a revision to a specific permit by rule in this chapter must meet the revised requirements to qualify for a permit by rule.

ConocoPhillips will comply with the requirements of this PBR as shown in this application.

(6) A facility shall comply with all applicable provisions of the FCAA, §111 (Federal New Source Performance Standards) and §112 (Hazardous Air Pollutants), and the new source review requirements of the FCAA, Part C and Part D and regulations promulgated thereunder.

The engine is subject to 40 CFR 60 Subpart JJJJ for Stationary Spark Ignition Internal Combustion Engines as well as 40 CFR 63 Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines. ConocoPhillips is in compliance with the applicable provisions of these regulations.

(7) There are no permits under the same commission account number that contain a condition or conditions precluding the use of a permit by rule under this chapter.

ConocoPhillips confirms that there are no permits under the same commission account number that contain condition(s) that would disqualify the use of PBR to authorize the installation and operation of the facility.

(8) The proposed facility or group of facilities shall obtain allowances for NO_x if they are subject to Chapter 101, Subchapter H, Division 3 of this title (relating to Mass Emissions Cap and Trade Program).

The Sugarkane Facility is not located in an area affected by the Mass Cap and Trade Program.

(b) No person shall circumvent by artificial limitations the requirements of §116.110 of

this title (relating to Applicability).

The requirements of §116.110 of this title will not be circumvented by artificial limitations.

(c) The emissions from the facility shall comply with all rules and regulations of the commission and with the intent of the TCAA, including protection of health and property of the public, and all emissions control equipment shall be maintained in good condition and operated properly during operation of the facility.

ConocoPhillips will comply with this subpart as applicable.

(d) Facilities permitted by rule under this chapter are not exempted from any permits or registrations required by local air pollution control agencies. Any such requirements must be in accordance with TCAA, §382.113 and any other applicable law.

There are no local air pollution control agency requirements for Live Oak County; therefore, the Sugarkane Facility is not applicable to this requirement.

Source Note: The provisions of this §106.4 adopted to be effective November 15, 1996, 21 TexReg 10881; amended to be effective April 7, 1998, 23 TexReg 3502; amended to be effective September 4, 2000, 25 TexReg 8653; amended to be effective March 29, 2001, 26 TexReg 2396

Title 30 Texas Administrative Code § 106.352
Permit By Rule (PBR) Checklist
Oil and Gas Production Facilities

The following checklist is designed to help you confirm that you meet Title 30 Texas Administrative Code § 106.352 (30 TAC § 106.352) requirements. If you do not meet all the requirements, you may alter the project design or operation in such a way that all the requirements of the PBR are met or you may obtain a construction permit. The PBR forms, tables, checklists and guidance documents are available from the Texas Commission on Environmental Quality (TCEQ), Air Permits Division Web site at www.tceq.state.tx.us/nav/permits/air_permits.html.

CHECK THE MOST APPROPRIATE ANSWER		
	Check the type of facilities covered by this registration(check all that are applicable): ☑ oil or gas production facility ☐carbon dioxide separation facility ☐ oil or gas pipeline facility	
	The facilities at the site include (check all that apply): ☑one or more tanks ☑ separators ☐dehydration units ☐ free water knockouts ☐gunbarrels ☐heater treaters ☐natural gas liquids recovery units ☐gas sweetening and other gas conditioning facilities ☐ sulfur recovery units	☑ YES ☐NO
	Will gas sweetening, sulfur recovery, or other gas conditioning facilities only condition gas that contains less than two (2) long tons per day of sulfur compounds as sulfur?	☑ YES ☐NO
1	Do all compressors and flares fully meet the requirements of 30 TAC § 106.512 and 30 TAC § 106.492, respectively? Attach data showing how the exemptions are met. Checklists are available.	☑ YES ☐NO
2	Are total emissions from all facilities, including fugitives and loading emissions, less than 25 tpy SO_2, VOC, or 250 tpy of CO or NO_x?	☑ YES ☐NO
	Have you attached calculations and other data, such as a gas analysis, showing that the emissions limits of the general rule are met?	☑ YES ☐NO
3	If the facility handles sour gas, is it located at least 1/4 mile from any recreational area, residence, or other structure not occupied or used solely by the owner or operator of the facility or the owner of the property upon which the facility is located? Attach a scaled map.	☐ YES ☐NO
4	Are total emissions of sulfur compounds, excluding sulfur oxides, less than 4.0 pounds per hour? Attach calculations.	☑ YES ☐NO
	Does the height of each vent emitting sulfur compounds meet or exceed the minimum vent height stated in 30 TAC § 106.352? List stack height: 30 ft	☑ YES ☐NO

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4.3 Permit By Rule 30 TAC §106.352

The requirements for claiming this PBR are duplicated below in plain type. The ConocoPhillips documentation of compliance with these requirements is in **bold type**.

Any oil or gas production facility, carbon dioxide separation facility, or oil or gas pipeline facility consisting of one or more tanks, separators, dehydration units, free water knockouts, gunbarrels, heater treaters, natural gas liquids recovery units, or gas sweetening and other gas conditioning facilities, including sulfur recovery units at facilities conditioning produced gas containing less than two long tons per day of sulfur compounds as sulfur are permitted by rule, provided that the following conditions of this section are met. This section applies only to those facilities named which handle gases and liquids associated with the production, conditioning, processing, and pipeline transfer of fluids found in geologic formations beneath the earth's surface.

(1) Compressors and flares shall meet the requirements of §106.512 and §106.492 of this title (relating to Stationary Engines and Turbines, and Flares).

The engines and flare at the Sugarkane Facility meet the requirements of §106.512 and §106.492 of this title (relating to Stationary Engines and Turbines and Flares) as shown in this application and the previous application submitted on March 5, 2009.

(2) Total emissions, including process fugitives, combustion unit stacks, separator, or other process vents, tank vents, and loading emissions from all such facilities constructed at a site under this section shall not exceed 25 tons per year (tpy) each of sulfur dioxide (SO2), all other sulfur compounds combined, or all volatile organic compounds (VOC) combined; and 250 tpy each of nitrogen oxide and carbon monoxide. Emissions of VOC and sulfur compounds other than SO2 must include gas lost by equilibrium flash as well as gas lost by conventional evaporation.

The Sugarkane Facility meets the requirements of this part as shown in Table 3-1 of this application. Emission calculations are provided in Appendix C.

(3) Any facility handling sour gas shall be located at least 1/4 mile from any recreational area or residence or other structure not occupied or used solely by the owner or operator of the facility or the owner of the property upon which the facility is located.

This rule is not applicable as the Sugarkane Facility does not handle sour gas.

(4) Total emissions of sulfur compounds, excluding sulfur oxides, from all vents shall not exceed 4.0 pounds per hour (lb/hr) and the height of each vent emitting sulfur compounds shall meet the requirements in Figure: 30 TAC 106.352(4),

except in no case shall the height be less than 20 feet.

The total emissions of sulfur compounds, excluding sulfur oxides, do not exceed 4.0 lb/hr as shown in Table 3-1 and Appendix C. The height of the flare associated with this application is 30 ft which is greater than the requirements in Figure: 30 TAC 106.352(4).

(5) Before operation begins, facilities handling sour gas shall be registered with the commission's Office of Permitting, Remediation, and Registration in Austin using Form PI-7 along with supporting documentation that all requirements of this section will be met. For facilities constructed under §106.353 of this title (relating to Temporary Oil and Gas Facilities), the registration is required before operation under this section can begin. If the facilities cannot meet this section, a permit under Chapter 116 of this title (relating to Control of Air Pollution by Permits for New Construction or Modification) is required prior to continuing operation of the facilities.

This rule is not applicable as the Sugarkane Facility does not handle sour gas.

Source Note: The provisions of this §106.352 adopted to be effective March 14, 1997, 22 TexReg 2439; amended to be effective September 4, 2000, 25 TexReg 8653

Exemption §106.492 Checklist
(Previously Standard Exemption 80)

Smokeless Gas Flares

YOU MUST SUBMIT A PI-7 WITH REQUIRED ATTACHMENTS BEFORE CONSTRUCTION OR OPERATION IF THE GAS BURNED IN THE FLARE HAS A SULFUR OR CHLORINE CONCENTRATION GREATER THAN 24 PPMV.

The following checklist is designed to help you confirm that you meet Exemption §106.492, previously standard exemption 80, requirements. **Any "no" answers indicate that the claim of exemption may not meet all requirements for the use of Exemption §106.492, previously standard exemption 80.** If you do not meet all the requirements, you may alter the project design/operation in such a way that all the requirements of the exemption are met, or obtain a construction permit.

YES	NO	NA	DESCRIPTION
✓	_	_	Have you included a description of how this exemption claim meets the general rule for the use of exemptions (§106.4 checklist is available)?
✓	_	_	Is the flare equipped with a tip designed to provide good mixing with air, flame stability and a tip velocity less than 60 ft/scc for gases having a lower heating value less than 1,000 BTU/ft^3, or less than 400 ft/sec for gases with a LHV greater than 1,000 BTU/ft^3? Attach a description including BTU content and tip velocity (Table 8 is available).
✓	_	_	Is the flare equipped with a continuously burning pilot or other automatic ignition system that assures gas ignition whenever vents are directed to the flare? Attach a description of the system.
_	_	✓	If the flare emits more than 4 #/hr of reduced sulfur compounds, excluding sulfur oxides, is it equipped with an alarm system that immediately notifies appropriate personnel when the ignition system ceases functioning? Attach a description of the system.
_	_	✓	If the flare emits less than 4 #/hr of reduced sulfur compounds and is not equipped with an alarm system, does the stack height meet the requirements of condition (d) of §106.352, previously standard exemption STDX 66? Required height:___. Actual height ___.
_	_	✓	If the flare burns gases containing more than 24 ppmv of sulfur, chlorine or compounds containing either element, is it located at least 1/4 mile from any recreational area, residence, or other structure not occupied or used solely by the owner or operator of the flare or owner of the property where the flare is located? Attach a scaled map.
		✓	If the flare emits HCl, does the heat release (BTU/hr based on lower heating value) equal or exceed 2.73 x 10E5 x HCl emission rate(lb/hr)? Attach calculations.
✓	_	_	If the flare emits SO2, does the heat release (BTU/hr based on lower heating value) equal or exceed 0.53 x 10E5 x SO2 emission rate (lb/hr)? Attach calculations.
✓	_		Will you limit the flare to burning only combustible mixtures of gases containing only carbon, hydrogen, nitrogen, oxygen, sulfur, chlorine, or compounds derived from these elements?
✓	_	_	Will the gas mixture always have a net or lower heating value of at least 200 BTU/ft3 prior to addition of air?
✓			Do you understand and will you ensure that liquids shall never be burned in the flare?

The heat release of F1MSS-VRU for SO_2 is greater than 49.10 Btu/hr as shown in Appendix C.

(2) operational conditions.

(A) The flare shall burn a combustible mixture of gases containing only carbon, hydrogen, nitrogen, oxygen, sulfur, chlorine, or compounds derived from these elements. When the gas stream to be burned has a net or lower heating value of more than 200 Btu/ft^3 prior to the addition of air, it may be considered combustible.

F1MSS-VRU burns a combustible mixture of gases containing only carbon, hydrogen, nitrogen, oxygen, sulfur, chlorine, or compounds derived from these elements. The lower heating value is 2,108 Btu/ft^3.

(B) A flare which burns gases containing more than 24 ppmv of sulfur, chlorine, or compounds containing either element shall be registered with the commission's Office of Permitting, Remediation, and Registration in Austin using Form PI-7 prior to construction of a new flare or prior to the use of an existing flare for the new service.

F1MSS-VRU does not burn gasses containing more than 24 parts per million by volume of sulfur, chlorine, or compounds containing either element; therefore, this rule is not applicable.

(C) Under no circumstances shall liquids be burned in the flare.

F1MSS-VRU will not burn liquids.

Source Note: The provisions of this §106.492 adopted to be effective March 14, 1997, 22 TexReg 2439; amended to be effective September 4, 2000, 25 TexReg 8653

Stationary Engines and Turbines
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.512

Check the most appropriate answer and include any additional information in the spaces provided. If additional space is needed, please include an extra page and reference the question number. The PBR forms, tables, checklists, and guidance documents are available from the TCEQ, Air Permits Division Web site at: **www.tceq.state.tx.us/permitting/air/nav/air_pbr.html**.

This PBR (**§ 106.512**) requires registration with the commission's Office of Permitting, Remediation, and Registration in Austin before construction if the horsepower (hp) of the facility is greater than 240 hp. Registration of the facility can be performed by completing a **Form PI-7**, "Registration for Permits by Rule," or **Form PI-7-CERT**, "Certification and Registration for Permits by Rule." This checklist should accompany the registration form.

Definitions:

The following words and terms, when used in this section, shall have the following meanings, unless the context clearly indicates otherwise.

A. Rich-burn Engine: A rich-burn engine is a gas-fired, spark-ignited engine that is operated with an exhaust oxygen content less than four percent by volume.

B. Lean-burn Engine: A lean-burn engine is a gas-fired, spark-ignited engine that is operated with an exhaust oxygen content of four percent by volume, or greater.

C. Rated Engine Horsepower: Engine rated horsepower shall be based on the engine manufacturer's maximum continuous load rating at the lesser of the engine or driven equipment's maximum published continuous speed.

D. Turbine Horsepower: Turbine rated horsepower shall be based on turbine base load, fuel power heating value, and International Standards Organization Standard Day Conditions of 59 degrees Fahrenheit, 1.0 atmosphere pressure, and 60 percent relative humidity.

CHECK THE MOST APPROPRIATE ANSWERS AND FILL IN THE BLANKS			
Rule	**Questions/Description**	**Information**	**Response**
	Will the engine or turbine be used as a replacement at an oil and gas site and does it meet all the requirements of the policy memo entitled, "**Replacement of All Engine and Turbine Components for Oil and Gas Production**?" *If "YES," registration is not required for like-kind replacements of engine or turbine components.* *If "NO," please continue.*		☐ YES ☑ NO
(1)	Is the engine or turbine rated less than 240 hp? *If "YES," then registration is not required, but the facility must comply with conditions (5) and (6) of this rule.* *If "NO," then registration is required and the facility must be registered by submitting a completed **Form PI-7** and **Table 29** or **Table 31**, as applicable, within 10 days after construction begins.*		☐ YES ☑ NO
(1)	Indicate the type of equipment (pick one): *If an engine, go to Question (2).* *If a turbine, go to Question (3)*	☑ Engine ☐ Turbine	☐ YES ☐ NO

Stationary Engines and Turbines
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.512

CHECK THE MOST APPROPRIATE ANSWERS AND FILL IN THE BLANKS			
Rule	**Questions/Description**	**Information**	**Response**
(2)	Is the engine rated at 500 hp or greater? *If "NO," the engine is between 240 hp and 500 hp. The engine must be registered by submitting a completed **Form PI-7** and a **Table 29** within 10 days after construction begins and must comply with conditions (5) and (6) of this rule.* *If "YES," in addition to registration, the engine must operate in compliance with the following nitrogen (NO_x) emission limit(s). Check the limit(s) applicable to this engine by answering the following:*		☑ YES ☐ NO
(2)(A)(i)	The engine is a gas-fired, rich-burn engine and will not exceed 2.0 grams per horsepower hour (g/hp-hr) under all operating conditions.	_____ g/hp-hr NO_x	☐ YES ☑ NO
(2)(A)(ii)	The engine is a spark-ignited, gas-fired, lean-burn engine or any compression-ignited, dual fuel-fired engine manufactured new after June 18, 1992, and will not exceed 2.0 g/hp-hr NO_x at manufacturer's rated full load and speed at all times; except, the engine will not exceed 5.0 g/hp-hr NO_x under reduced speed and 80% and 100% of full torque conditions.	2 g/hp-hr NO_x	☑ YES ☐ NO
(2)(A)(iii)	The engine is any spark-ignited, lean-burn two-cycle or four-cycle engine or any compression-ignited, dual fuel-fired engine rated 825 hp or greater and manufactured between September 23, 1982 and June 18, 1992, and will not exceed 5.0 g/hp-hr NO_x under all operating conditions.	_____ g/hp-hr NO_x	☐ YES ☑ NO
(2)(A)(iv)	The engine is any spark-ignited, gas-fired, lean-burn, four-cycle engine or compression-ignited, dual-fuel-fired engine that was manufactured before June 18, 1992, and is rated less than 825 hp, or was manufactured before September 23, 1982, and will not exceed 5.0 g/hp-hr NO_x at manufacturer's rated full load and speed at all times; except, the engine will not exceed 8.0 g/hp-hr NO_x under reduced speed and 80% and 100% of full torque conditions.	_____ g/hp-hr NO_x	☐ YES ☑ NO
(2)(A)(v)	The engine is any spark-ignited, gas-fired, two-cycle, lean-burn engine that was manufactured before June 18, 1992, and is rated less than 825 hp, or was manufactured before September 23, 1982, and will not exceed 8.0 g/hp-hr NO_x under all operating conditions.	_____ g/hp-hr NO_x	☐ YES ☑ NO
(2)(A)(vi)	The engine is any compression-ignited, liquid-fired engine and will not exceed 11.0 g/hp-hr NO_x under all operating conditions.	_____ g/hp-hr NO_x	☐ YES ☑ NO
(2)(B)	Does the engine require an automatic air-fuel ratio controller to meet the NO_x limit(s) above?		☑ YES ☐ NO
(2)(B)	For spark-ignited gas-fired or compression-ignited dual fuel-fired engines, is the engine required to have an automatic air-fuel ratio controller under condition (2)(B) of the PBR?		☐ YES ☐ NO

Stationary Engines and Turbines
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.512

CHECK THE MOST APPROPRIATE ANSWERS AND FILL IN THE BLANKS			
Rule	**Questions/Description**	**Information**	**Response**
(2)(C)	Are you aware of and accept responsibility for the record and testing requirements as specified in (2)(C) of the PBR?		☑ YES ☐ NO
(3)	Is the turbine rated 500 hp or more? *If "NO," the turbine is between 240 hp and 500 hp. The engine only needs to be registered by submitting a completed* ***Form PI-7*** *and a* ***Table 31*** *within 10 days after construction begins.* *If "YES," in addition to registration, the turbine must operate in compliance with the following emission limit(s).*		☐ YES ☑ NO
(3)(A)	Will the emissions of NO_x exceed 3.0 g/hp-hr for gas-firing?		☐ YES ☐ NO
(3)(B)	Will the turbine meet all applicable NO_x and sulfur dioxide (or fuel sulfur) emission limitations, monitoring requirements, and reporting requirements of **40 CFR Part 60, NSPS Subpart GG**?		☐ YES ☐ NO
(4)	Is the engine or turbine rated less than 500 hp or used for temporary replacement purposes? *If "NO," go to Question (5).* *If "YES," the equipment does not have to meet the emission limits of (2) and (3). However, the temporary replacement equipment can only remain in service for a maximum of 90 days.*		☐ YES ☑ NO
(5)	What type of fuel will be used and will the fuel meet the requirements of the PBR? *Indicate the fuel(s) used.*	☐ Natural gas ☐ Liquid petroleum gas ☑ Field gas ☐ Liquid fuel	☑ YES ☐ NO
(6)	Does the installation comply with the National Ambient Air Quality Standards (NAAQS)? *Note: Indicate which method is used and attach the modeling report and/or calculations and diagrams to support the selected method.*	☑ Modeling ☐ Stack height ☐ Facility emissions and property line distance	☑ YES ☐ NO
(6)	Have you included a modeling report and/or calculations and diagrams to support the selected NAAQS compliance determination method?		☑ YES ☐ NO
	For the following questions, please refer to the **Electric Generators under Permit by Rule** policy memo from October 2006.		
(7)	Is the engine or turbine used to generate electricity? *If "NO," the following do not apply.*		☐ YES ☑ NO

Stationary Engines and Turbines
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.512

CHECK THE MOST APPROPRIATE ANSWERS AND FILL IN THE BLANKS			
Rule	**Questions/Description**	**Information**	**Response**
(7)	Will the engine or turbine be used to generate electricity to operate facilities authorized by a New Source Review Permit? *If "YES," the engine or turbine does not qualify for this PBR and authorization must be obtained through a permit amendment.*		☐ YES ☐ NO
(7)	If the engine or turbine is used to generate electricity, will it be exclusively for on-site use at locations which cannot be connected to an electric grid? *If "YES," describe why access to the electric grid is not available.* *If "NO," the engine or turbine does not qualify for this PBR.*		☐ YES ☐ NO
(7)	Has an Electric Generating Unit Standard Permit been issued for one of the following activities for which the engine or turbine will only be used to generate electricity? ☐ Engines or turbines used to provide power for the operation of facilities registered under the Air Quality Standard Permit for Concrete Batch Plants. ☐ Engines or turbines satisfying the conditions for facilities permitted by rule under **30 TAC 106, Subchapter E** (relating to Aggregate and Pavement). ☐ Engines or turbines used exclusively to provide power to electric pumps used for irrigating crops. *If "NO," the engine or turbine does not qualify for this PBR.*		☐ YES ☐ NO
Rule	**Other Applicable Rules and Regulations**	**Why or Why Not?**	**Response**
	If the engine or turbine is located in the Houston/Galveston nonattainment area, is the site subject to the Mass Emission Cap and Trade Program?	N/A; Unit located in Live Oak County	☐ YES ☑ NO
	Is the facility subject to **30 TAC Chapter 115**?	N/A; Unit located in Live Oak County	☐ YES ☑ NO
	Is the facility subject to **30 TAC Chapter §§ 117.201-223**?	N/A; Unit located in Live Oak County	☐ YES ☑ NO

APIRT
JAN 28 2010

Table 29
RECIPROCATING ENGINES

ENGINE DATA

Emission Point Number From Table 1(a) C-2

APPLICATION

✓ Gas Compression
____ Electric Generation
____ Refrigeration
____ Other (Specify)

Manufacturer Caterpillar
Model No. G3508 LE
Serial No. WPN01614
Orig. Mfr. Date 8/17/2009
Rebuild Date(s) ____
No. of Cylinders 6
Compression Ratio 8:1

✓ 4 Stroke Cycle ____ Carburetted ____ Spark Ignited ____ Dual Fuel
____ 2 Stroke Cycle ____ Fuel Injected ____ Diesel

Naturally Aspirated ____ Blower/Pump Scavenged ____ Turbocharged & I.C. ____
Turbocharged ✓ Intercooled (I.C.) ____ I.C. Water Temperature ____

Ignition/Injection Timing: ____ Fixed ____ Variable

	Mfg. Rating	Proposed Operating Range
Horsepower	670 bhp	670 bhp
Speed (rpm)	1,400	1,400

FUEL DATA

✓ Field Gas ____ Landfill Gas ____ LP Gas ____ Other
____ Natural Gas ____ Digester Gas ____ Diesel

Engine Fuel Consumption 7,510 BTU/bhp-hr
Heat Value (specify units) 1081 Btu/scf (HHV) (LHV)
Fuel Sulfur Content 1 (granins/100 scf)(weight percent)

FULL LOAD EMISSIONS DATA

NO_x 2.0 g/bhp-hr CO 4.0 g/bhp-hr
____ ppmv ____ ppmv
VOC(C_3^+) 1.0 g/bhp-hr Total HC 3.04 g/bhp-hr
____ ppmv ____ ppmv

Attach information showing emissions versus engine speed and load.

Method of Emissions Control:

✓ Lean Operation ____ Parameter Adjustment ____ SCR Catalyst
____ Stratified Charge ____ NSCR Catalyst ____ Other (Specify)

ADDITIONAL INFORMATION

On separate sheets attach the following:

A. A copy of engine manufacturer's site rating or general rating specification for the engine model.
B. Tyical fuel analysis, including sulfur content and heating value. For gaseous fuels, provide mole percent of constituents.
C. Description of air/fuel ratio control system (manufacturers's information acceptable).
D. Details regarding principle of operation of emissions controls. If add-on equipment is used, provide make and model and manufacturer's information.
E. Exhaust parameter information on Table 1(a).

5.0 NAAQS ANALYSIS SUMMARY

Though compliance was shown for C-1 in the previous application dated March 5, 2009, total facility impacts must be shown to establish compliance with the National Ambient Air Quality Standards (NAAQS). As shown in Appendix F, the Sugarkane Facility meets the NAAQS.

The air quality impact analysis was conducted utilizing the EPA SCREEN3 model (EPA 1995). SCREEN3 was used to establish a conservative estimate of [maximum] short-term (1-hour) impacts from a single source. Consequently, 3-hour, 8-hour, 24-hour, and annual impacts were calculated using conversion factors listed in TCEQ RG-25 guidance. SCREEN3 is a single source Gaussian plume model that incorporates source-related factors and meteorological factors to estimate pollutant concentrations in the atmosphere from continuous sources. The model assumes that the pollutant undergoes no chemical reactions following release and that no other removal processes, such as wet or dry deposition, act on the plume during its transport from the source. The model maximizes a project's impact by investigating a full spectrum of wind speed and atmospheric stability classes and minimizes atmospheric mixing height. Inputs to this model include an emission rate, stack/release parameters, and associated building dimensions.

Stationary Engines and Turbines
Air Permits by Rule (PBR) Checklist
Title 30 Texas Administrative Code § 106.512

CHECK THE MOST APPROPRIATE ANSWERS AND FILL IN THE BLANKS			
		Why or Why Not?	**Response**
	Is the facility subject to **40 CFR Part 60, NSPS Subpart D**?	N/A; Not a steam generator	☐ YES ☑ NO
	Is the facility subject to **40 CFR Part 60, NSPS Subpart Da**?	N/A; Not electric utility steam gen.	☐ YES ☑ NO
	Is the facility subject to **40 CFR Part 60, NSPS Subpart Db**?	N/A; Not ICI steam gen. unit	☐ YES ☑ NO
	Is the facility subject to **40 CFR Part 60, NSPS Subpart Dc**?	N/A; Not small ICI steam gen. unit	☐ YES ☑ NO
	Is the facility subject to **40 CFR Part 60, NSPS Subpart GG**?	N/A; Unit not a turbine	☐ YES ☑ NO
	Is the facility subject to **40 CFR Part 63, MACT Subpart YYYY**?	N/A; Unit not a turbine	☐ YES ☑ NO
	Is the facility subject to **40 CFR Part 63, MACT Subpart ZZZZ**	Meets requirements of 40 CFR 63 JJJJ, no further requirements apply under this subpart	☑ YES ☐ NO
	Is the facility subject to **40 CFR Part 63, MACT Subpart PPPPP**?	N/A; Unit not a test cell/stand	☐ YES ☑ NO

Record Keeping: In order to demonstrate compliance with the general and specific requirements of this PBR, sufficient records must be maintained to demonstrate that all requirements are met at all times. If the engine or turbine is rated greater than 500 horsepower, all records must be maintained as required by **30 TAC § 106.512(2)(C)**. The registrant should also become familiar with the additional record keeping requirements in **30 TAC § 106.8**. The records must be made available immediately upon request to the commission or any air pollution control program having jurisdiction. If you have any questions about the type of records that should be maintained or testing requirements, contact the Air Program in the **TCEQ Regional Office** for the region in which the site is located.

Recommended Calculation Method: In order to demonstrate compliance with this PBR, emission factors for each air contaminant from the EPA Compilation of Air Pollutant Emission Factors (AP-42), Fifth Edition, Volume 1, Section 3.1: Stationary Gas Turbines for Electricity Generation at: **www.epa.gov/ttn/chief/ap42/index.html** should be used, including, the specific air contaminant's emission limit listed on the table below.

4.5 Permit By Rule 30 TAC §106.512

The requirements for claiming this PBR are duplicated below in plain type. The ConocoPhillips documentation of compliance with these requirements is in **bold type.**

Gas or liquid fuel-fired stationary internal combustion reciprocating engines or gas turbines that operate in compliance with the following conditions of this section are permitted by rule.

(1) The facility shall be registered by submitting the commission's Form PI-7, Table 29 for each proposed reciprocating engine, and Table 31 for each proposed gas turbine to the commission's Office of Permitting, Remediation, and Registration in Austin within ten days after construction begins. Engines and turbines rated less than 240 horsepower (hp) need not be registered, but must meet paragraphs (5) and (6) of this section, relating to fuel and protection of air quality. Engine hp rating shall be based on the engine manufacturer's maximum continuous load rating at the lesser of the engine or driven equipment's maximum published continuous speed. A rich-burn engine is a gas-fired spark-ignited engine that is operated with an exhaust oxygen content less than 4.0% by volume. A lean-burn engine is a gas-fired spark-ignited engine that is operated with an exhaust oxygen content of 4.0% by volume, or greater.

The Form PI-7CERT and Table 29 are included in Appendix A.

(2) For any engine rated 500 hp or greater, subparagraphs (A) - (C) of this paragraph shall apply.

(A) The emissions of nitrogen oxides (NO_x) shall not exceed the following limits:

(i) 2.0 grams per horsepower-hour (g/hp-hr) under all operating conditions for any gas-fired rich-burn engine;

This provision is not applicable as the unit is a lean-burn engine as documented in the equipment-specific vendor data provided in Appendix E.

(ii) 2.0 g/hp-hr at manufacturer's rated full load and speed, and other operating conditions, except 5.0 g/hp-hr under reduced speed, 80-100% of full torque conditions, for any spark-ignited, gas-fired lean-burn engine, or any compression-ignited dual fuel-fired engine manufactured new after June 18, 1992;

As documented in the equipment-specific vendor data provided in Appendix E, the emissions from NOx will not exceed 2.0 g/hp-hr.

(iii) 5.0 g/hp-hr under all operating conditions for any spark-ignited, gas-fired, lean-burn two-cycle or four-cycle engine or any compression-ignited dual fuel-fired engine rated 825 hp or greater and manufactured after September

23, 1982, but prior to June 18, 1992;

The engine being added to the Sugarkane Facility was manufactured after June 18, 1992 and is less than 825 hp.

(iv) 5.0 g/hp-hr at manufacturer's rated full load and speed and other operating conditions, except 8.0 g/hp-hr under reduced speed, 80-100% of full torque conditions for any spark-ignited, gas-fired, lean-burn four-cycle engine, or any compression-ignited dual fuel-fired engine that:
(I) was manufactured prior to June 18, 1992, and is rated less than 825 hp; or
(II) was manufactured prior to September 23, 1982;

The engine being added to the Sugarkane Facility was manufactured after June 18, 1992; therefore, this rule is not applicable.

(v) 8.0 g/hp-hr under all operating conditions for any spark-ignited, gas-fired, two-cycle lean-burn engine that:
(I) was manufactured prior to June 18, 1992, and is rated less than 825 hp; or
(II) was manufactured prior to September 23, 1982;

This provision is not applicable as the unit is not a spark-ignited, gas-fired, two-cycle lean-burn engine.

(vi) 11.0 g/hp-hr for any compression-ignited liquid-fired engine.

This provision is not applicable as the unit is not a compression-ignited liquid-fired engine.

(B) For such engines which are spark-ignited gas-fired or compression-ignited dual fuel-fired, the engine shall be equipped as necessary with an automatic air-fuel ratio (AFR) controller which maintains AFR in the range required to meet the emission limits of subparagraph (A) of this paragraph. An AFR controller shall be deemed necessary for any engine controlled with a non-selective catalytic reduction (NSCR) converter and for applications where the fuel heating value varies more than ± 50 British thermal unit/standard cubic feet from the design lower heating value of the fuel. If an NSCR converter is used to reduce NO_x, the automatic controller shall operate on exhaust oxygen control.

The engine at the Sugarkane Facility is equipped with an automatic air-fuel ratio (AFR) controller operating on exhaust oxygen as shown in the equipment-specific vendor data provided in Appendix E.

(C) Records shall be created and maintained by the owner or operator for a period of at least two years, made available, upon request, to the commission and any local air pollution control agency having jurisdiction, and shall include the following:

(i) documentation for each AFR controller, manufacturer's, or supplier's recommended maintenance that has been performed, including replacement of the oxygen sensor as necessary for oxygen sensor-based controllers. The oxygen sensor shall be replaced at least quarterly in the absence of a specific written recommendation;

ConocoPhillips will maintain documentation for each AFR controller showing that the manufacturer's or supplier's recommended maintenance has been performed. The oxygen sensor will be replaced at least quarterly in the absence of a specific written recommendation.

(ii) documentation on proper operation of the engine by recorded measurements of NO_x and carbon monoxide (CO) emissions as soon as practicable, but no later than seven days following each occurrence of engine maintenance which may reasonably be expected to increase emissions, changes of fuel quality in engines without oxygen sensor-based AFR controllers which may reasonably be expected to increase emissions, oxygen sensor replacement, or catalyst cleaning or catalyst replacement. Stain tube indicators specifically designed to measure NO_x and CO concentrations shall be acceptable for this documentation, provided a hot air probe or equivalent device is used to prevent error due to high stack temperature, and three sets of concentration measurements are made and averaged. Portable NO_x and CO analyzers shall also be acceptable for this documentation;

ConocoPhillips will maintain the required documentation of NO_x and CO emission measurements as soon as practicable, but no later than seven days following:

1) **Each occurrence of engine maintenance which may reasonably be expected to increase emissions, and**
2) **Oxygen sensor replacement.**

(iii) documentation within 60 days following initial engine start-up and biennially thereafter, for emissions of NO_x and CO, measured in accordance with United States Environmental Protection Agency (EPA) Reference Method 7E or 20 for NO_x and Method 10 for CO. Exhaust flow rate may be determined from measured fuel flow rate and EPA Method 19. California Air Resources Board Method A-100 (adopted June 29, 1983) is an acceptable alternate to EPA test methods. Modifications to these methods will be subject to the prior approval of the Source and Mobile Monitoring Division of the commission. Emissions shall be measured and recorded in the as-found operating condition; however, compliance determinations shall not be established during start-up, shutdown, or under breakdown conditions. An owner or operator may submit to the appropriate regional office a report of a valid emissions test performed in Texas, on the same engine, conducted no more than 12 months prior to the most recent start of construction date, in lieu of performing an emissions test within 60 days following engine start-up at the new site. Any such engine shall be sampled no less frequently than biennially (or every 15,000 hours of elapsed run time, as recorded by an elapsed run time meter) and upon request of the executive director. Following the initial compliance test,

in lieu of performing stack sampling on a biennial calendar basis, an owner or operator may elect to install and operate an elapsed operating time meter and shall test the engine within 15,000 hours of engine operation after the previous emission test. The owner or operator who elects to test on an operating hour schedule shall submit in writing, to the appropriate regional office, biennially after initial sampling, documentation of the actual recorded hours of engine operation since the previous emission test, and an estimate of the date of the next required sampling.

ConocoPhillips will comply with initial and biennial monitoring and reporting requirements, as instructed herein.

(3) For any gas turbine rated 500 hp or more, subparagraphs (A) and (B) of this paragraph shall apply.

(A) The emissions of NO_x shall not exceed 3.0 g/hp-hr for gas-firing.

(B) The turbine shall meet all applicable NO_x and sulfur dioxide (SO_2) (or fuel sulfur) emissions limitations, monitoring requirements, and reporting requirements of EPA New Source Performance Standards Subpart GG--Standards of Performance for Stationary Gas Turbines. Turbine hp rating shall be based on turbine base load, fuel lower heating value, and International Standards Organization Standard Day Conditions of 59 degrees Fahrenheit, 1.0 atmosphere and 60% relative humidity.

This provision is not applicable as the units are not gas-fired turbines.

(4) Any engine or turbine rated less than 500 hp or used for temporary replacement purposes shall be exempt from the emission limitations of paragraphs (2) and (3) of this section. Temporary replacement engines or turbines shall be limited to a maximum of 90 days of operation after which they shall be removed or rendered physically inoperable.

This requirement is not applicable as the engine at the Sugarkane Facility is greater than 500 hp.

(5) Gas fuel shall be limited to: sweet natural gas or liquid petroleum gas, fuel gas containing no more than ten grains total sulfur per 100 dry standard cubic feet, or field gas. If field gas contains more than 1.5 grains hydrogen sulfide or 30 grains total sulfur compounds per 100 standard cubic feet (sour gas), the engine owner or operator shall maintain records, including at least quarterly measurements of fuel hydrogen sulfide and total sulfur content, which demonstrate that the annual SO_2 emissions from the facility do not exceed 25 tons per year (tpy). Liquid fuel shall be petroleum distillate oil that is not a blend containing waste oils or solvents and contains less than 0.3% by weight sulfur.

The engine will be fueled with field gas with a sulfur content of less than 30 grain of total sulfur per 100 standard cubic feet; however, the short-term and long-term emissions representations were based on 20 grains of sulfur per 100 scf and 5 grains of sulfur per 100 scf, for conservatism.

(6) There will be no violations of any National Ambient Air Quality Standard (NAAQS) in the area of the proposed facility. Compliance with this condition shall be demonstrated by one of the following three methods:

(A) ambient sampling or dispersion modeling accomplished pursuant to guidance obtained from the executive director. Unless otherwise documented by actual test data, the following nitrogen dioxide (NO_2)/NO_x ratios shall be used for modeling NO_2 NAAQS;

(B) all existing and proposed engine and turbine exhausts are released to the atmosphere at a height at least twice the height of any surrounding obstructions to wind flow. Buildings, open-sided roofs, tanks, separators, heaters, covers, and any other type of structure are considered as obstructions to wind flow if the distance from the nearest point on the obstruction to the nearest exhaust stack is less than five times the lesser of the height, Hb, and the width, Wb, where:

(C) the total emissions of NO_x (nitrogen oxide plus NO_2) from all existing and proposed facilities on the property do not exceed the most restrictive of the following:

(i) 250 tpy;

(ii) the value (0.3125 D) tpy, where D equals the shortest distance in feet from any existing or proposed stack to the nearest property line.

Compliance with NAAQS for NO_x, SO_2, PM_{10}, and CO is demonstrated in Section 5 and Appendix F which contain the results of the analysis performed using the SCREEN3 model.

(7) Upon issuance of a standard permit for electric generating units, registrations under this section for engines or turbines used to generate electricity will no longer be accepted, except for:

(A) engines or turbines used to provide power for the operation of facilities registered under the Air Quality Standard Permit for Concrete Batch Plants;

(B) engines or turbines satisfying the conditions for facilities permitted by rule under Subchapter E of this title (relating to Aggregate and Pavement); or

(C) engines or turbines used exclusively to provide power to electric pumps used for irrigating crops.

This provision is not applicable as the engine is not an electric-generating unit.

Source Note: The provisions of this §106.512 adopted to be effective March 14, 1997, 22 TexReg 2439; amended to be effective September 4, 2000, 25 TexReg 8653; amended to be effective June 13, 2001, 26 TexReg 4108

APPENDIX D

EMISSION CALCULATIONS (March 5, 2009)

Table 1
ConocoPhillips Company
Emissions Summary
Sugarkane Central Battery 1

Description (FIN)	PM_{10}		VOC		NOx		CO		SO_2		H_2S		HAPs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
*Total Existing Facility Emissions	0.059	0.261	3.654	16.308	11.637	14.193	51.426	25.110	0.333	0.135	0.004	0.002	0.414	1.836
Condensate Tank 7 (T-7)	-	-	0.000	0.033	-	-	-	-	-	-	0.000	0.000	0.000	0.001
Condensate Tank 8 (T-8)	-	-	0.000	0.033	-	-	-	-	-	-	0.000	0.000	0.000	0.001
Condensate Tank 9 (T-9)	-	-	0.000	0.033	-	-	-	-	-	-	0.000	0.000	0.000	0.001
Condensate Tank 10 (T-10)	-	-	0.000	0.033	-	-	-	-	-	-	0.000	0.000	0.000	0.001
Compressor Emissions (C-2)	0.061	0.269	1.625	7.117	3.250	14.233	6.499	28.467	0.293	0.320	-	-	0.558	2.443
Additional Flare Emissions from C-2 (F1MSS-VRU)	0.012	0.017	-	-	0.101	0.001	0.865	0.005	0.001	0.000	-	-	-	-
Fugitive Emissions (FUG)	-	-	0.082	0.361	-	-	-	-	-	-	-	-	-	-
Total	**0.132**	**0.546**	**5.363**	**23.918**	**14.988**	**28.427**	**58.791**	**53.582**	**0.626**	**0.455**	**0.004**	**0.002**	**0.972**	**4.282**

Table 3
ConocoPhillips Company
Flare Waste Combustion (F1MSS-VRU)
Sugarkane Central Battery 1

Emissions from Diverting T-7, T-8, T-9, T-10 Standing Breating Losses to F1MSS-VRU during 5% VRU Downtime

[1]Total Emissions to Flare, m (lb/hr)	Heating Value of Fuel (Btu/scf)	Annual Operating Hrs.[5]	[2]MW (lb/lbmol)	[3]Flow, V (scfm)	Flow, V (scfh)	Total Stream (MMBtu/hr)
69.40	2,180.00	438.00	40.73	10.94	656.69	1.43

Total Emissions after Combustion

Contaminant	[4,6]Emission Factor (lb/MMBtu)	Emissions (lb/hr)	Emissions (tpy)	Emissions (lb/hr) (10% Safety Factor)	Emissions (tpy) (10% Safety Factor)
NOx	0.064	0.092	0.020	0.101	0.001
CO	0.550	0.787	0.172	0.865	0.005
SO_2	0.001	0.001	0.000	0.001	0.000
PM10	0.007	0.011	0.015	0.012	0.017

[1]Total Emissions to Flare includes Working and Breathing Losses from T-7, T-8, T-9 and T-10. As shown in Appendix D The uncontrolled Working and Breating losses each tank is 17.35 lb/hr VOC.

[2]Molecular Weight calculated by HYSYS.

[3]Ideal Gas Law : $V = (mRT)/(60*MW*P)$

$T = 528$ R

$R = 10.73$ (psia*ft^3)/(lbmol*R)

$P = 14.7$ psia

[4]NOx and CO Emission Factors from "Air Permit Technical Guidance for Chemical Sources: Flares and Vapor Oxidizers (RG-109)

[5]Low-pressure gas will only be routed to F1MSS-VRU during VRU downtime or maintenance. Based on 5% VRUI downtime 438 hr/yr.

[6]SO2 and PM10 factor is taken from AP-42 1.4 Table 1.4-2

Table 4
ConocoPhillips Company
Fugitive Emission Calculations
Sugarkane Central Battery 1

Component	Type of Service	Count	Uncontrolled Factor w/o C2 (lb/hr/component)[1]	Control Efficiency %	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
Valves	Vapor	15	0.00992	0%	0.03	0.11
	Light Liquid	10	0.0055	0%	0.02	0.07
	Heavy Liquid	0	0.0000185	0%	0.00	0.00
Pumps	Light Liquid	3	0.02866	0%	0.03	0.11
	Heavy Liquid	0	0.00113	0%	0.00	0.00
Flanges	Vapor	30	0.00086	0%	0.00	0.02
	Light Liquid	0	0.000243	0%	0.00	0.00
	Heavy Liquid	0	0.00000086	0%	0.00	0.00
Connectors	Vapor	0	0.00044	0%	0.00	0.00
Compressors	Vapor	1	0.0194	0%	0.00	0.01
Total VOC Emissions					**0.07**	**0.33**
10% Safety Factor					**0.08**	**0.36**

Weight Fraction VOC[2]

Gas	Light Oil	Heavy Oil	Water/Oil
0.171	0.296	0.03	0.296

Notes:

[1] Emission factors are derived from TCEQ Guidance Document "Fugitive Emissions – Equipment Leak Fugitives", October 2000 (Oil and Gas Production Operations).

[2] EPA emissions factors for Gas &Light Oil, "Calculation Notebook for Oil and Gas Production Equipment Fugitive Emissions" API Publication No. 4638, April 1996, pg. 15

Sample Calculations

Hourly emissions (lb/hr) = Component count (#)*Emission factor (lb/hr)*Weight Fraction VOC

Annual emissions (tpy) = Hourly emissions (lb/hr)*8,760 (hr/yr)/2000 (lb/ton)

ConocoPhillips Company

Sugarkane Central Battery 1
Emissions Summary

	FIN	EPN	Potential Emissions - tons per year (tpy) NOx	CO	VOC	PM_{10}	SO_2	H_2S	HAPs
Compressor Engine									
Caterpillar G3508 TALE (4SLB) - Combustion	C-1	C-1	14.67	22.00	2.27	0.29	0.12	-	1.38
Caterpillar G3508 TALE (4SLB) - Blowdown	C-1	F2MSS-BDWN	-	-	3.82	-	-	2.7E-04	0.10
Storage Tanks									
Condensate - Working & Standing losses	T-1,2,3,4,5,6	F1MSS-VRU	-	-	0.25	-	-	1.4E-05	5.7E-03
Condensate - Flashing losses	T-1,2,3,4,5,6	F1MSS-VRU	-	-	5.05	-	-	3.6E-04	0.15
Produced Water - Working & Standing	T-WAT	F1MSS-VRU	-	-	2.8E-04	-	-	2.0E-08	8.0E-06
Produced Water - Flashing losses	T-WAT	F1MSS-VRU	-	-	Incl. *	-	-	Incl. *	Incl. *
Slop Tank - Working & Standing losses	T-SLOP	F1MSS-VRU	-	-	8.2E-03	-	-	5.8E-07	0.0013
Slop Tank - Flashing losses	T-SLOP	F1MSS-VRU	-	-	Incl. *	-	-	Incl. *	Incl. *
Flare Pilots									
Tank/Loading MSS Flare	F1MSS-VRU	F1MSS-VRU	7.9E-03	6.6E-03	4.3E-04	6.0E-04	3.3E-04	-	-
Compressor LP Gas MSS Flare	F2MSS-BDWN	F2MSS-BDWN	1.1E-02	8.8E-03	5.8E-04	8.0E-04	4.3E-04	-	-
Flare Combustion Emissions									
Tank/Loading MSS Flare	T-1,2,3,4,5,6, T-WAT, T-SLOP, LOAD	F1MSS-VRU	0.40	2.19	-	-	0.010	1.1E-04	-
Compressor LP Gas MSS Flare	C-1	F2MSS-BDWN	0.68	3.69	-	-	0.026	2.8E-04	-
Truck Loading	LOAD	F1MSS-VRU	-	-	0.36	-	-	2.6E-05	0.047
Fugitive Emissions	FUG	FUG	-	-	6.36	-	-	1.7E-03	0.36
Total Emissions (tpy) - (for PI-7 CERT)			**15.77**	**27.90**	**18.12**	**0.29**	**0.15**	**2.7E-03**	**2.04**

* Flashing loss emissions for Produced Water and Slop tanks are included in the Condensate tank emissions

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Sugarkane Central Battery 1
Emissions Summary

	FIN	EPN	Potential Emissions - pounds per hour (lb/hr) NOx	CO	VOC	PM_{10}	SO_2	H_2S	HAPs
Compressor Engine									
Caterpillar G3508 TALE (4SLB) - Combustion	C-1	C-1	3.35	5.02	0.52	0.066	0.027	-	0.31
Caterpillar G3508 TALE (4SLB) - Blowdown	C-1	F2MSS-BDWN	-	-	0.87	-	-	6.2E-05	0.023
Storage Tanks									
Condensate - Working & Standing losses	T-1,2,3,4,5,6	F1MSS-VRU	-	-	2.5E-03	-	-	1.5E-07	6.0E-05
Condensate - Flashing losses	T-1,2,3,4,5,6	F1MSS-VRU	-	-	1.15	-	-	7.0E-05	0.029
Produced Water - Working & Standing	T-WAT	F1MSS-VRU	-	-	1.5E-07	-	-	1.1E-11	4.3E-09
Produced Water - Flashing losses	T-WAT	F1MSS-VRU	-	-	Incl. *	-	-	Incl. *	Incl. *
Slop Tank - Working & Standing losses	T-SLOP	F1MSS-VRU	-	-	4.4E-05	-	-	3.1E-09	6.7E-06
Slop Tank - Flashing losses	T-SLOP	F1MSS-VRU	-	-	Incl. *	-	-	Incl. *	Incl. *
Flare Pilots									
Tank/Loading MSS Flare	F1MSS-VRU	F1MSS-VRU	1.5E-03	1.3E-03	8.3E-05	1.1E-04	6.2E-05	-	-
Compressor LP Gas MSS Flare	F2MSS-BDWN	F2MSS-BDWN	2.0E-03	1.7E-03	1.1E-04	1.5E-04	8.3E-05	-	-
Flare Combustion Emissions									
Tank/Loading MSS Flare	T-1,2,3,4,5,6, T-WAT, T-SLOP, LOAD	F1MSS-VRU	1.84	10.00	-	-	0.048	5.1E-04	-
Compressor LP Gas MSS Flare	C-1	F2MSS-BDWN	7.74	42.11	-	-	0.30	3.2E-03	-
Truck Loading	LOAD	F1MSS-VRU	-	-	0.070	-	-	5.0E-06	0.0091
Fugitive Emissions	FUG	FUG	-	-	1.45	-	-	3.8E-04	0.082
Total Emissions (tpy) - (for PI-7 CERT)			**12.93**	**57.14**	**4.06**	**0.066**	**0.37**	**4.2E-03**	**0.46**

* Flashing loss emissions for Produced Water and Slop tanks are included in the Condensate tank emissions

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Sugarkane Central Battery 1
Compressor Engine Emissions

FIN/EPN: C-1

		Emission Factors (EF)				
Unit ID	Engine Description	NO_x [1]	CO [1]	VOC [1]	PM [2]	SO_2 [2]
C-1	CAT G3508 TALE [4SLB]	2.0	3.0	0.31	0.039	0.016

					Air Emissions - Tons per Year					
Unit ID	Engine Description	Hp	Hrs		NO_x	CO	VOC	PM/PM_{10}	SO_2	HAPs
C-1	CAT G3508 TALE [4SLB]	633	8760	Tons per year (tpy)	12.22	18.34	1.89	0.24	0.098	1.15
				tpy - Including 20% safety factor	**14.67**	**22.00**	**2.27**	**0.29**	**0.12**	**1.38**

	Air Emissions - Pounds per hour					
	NO_x	CO	VOC	PM/PM_{10}	SO_2	HAPs
Pound per hour (lb/hr)	2.79	4.19	0.43	0.055	0.022	0.26
lb/hr - Including 20% safety factor	**3.35**	**5.02**	**0.52**	**0.066**	**0.027**	**0.31**

Example calculations - NOx Emissions
2.0 g/hp-hr x 633 hp x 8760 hrs/yr x 1 lb/453.59 g x 1 ton/2000 lbs = 12.22 tpy
2.0 g/hp-hr x 633 hp x 1 lb/453.59 g = 2.79 lb/hr

(1) Manufacturer's Emissions Factors for NOx, CO, and VOC. NOx and CO adjusted with safety factor to 2.0 g/hp-hr and 3.0 g/hp-hr, respectively.
(2) US Environmental Protection Agency AP-42, Uncontrolled Emission Factors (SO_2 and PM) for 4-stroke lean burn engines, Table 3.2-2, 7/2000.
Units of lb/MMBtu are converted to g/hp-hr using fuel usage data from manufacturer.

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ConocoPhillips Company

Sugarkane Central Battery 1
Hazardous Air Pollutant (HAP) Emissions from Engine

FIN/EPN: C-1

	C-1 - CAT G3508 TALE [4SLB] Emission Factor [1]	
	lb/MMBtu	% of total VOC
VOC	1.18E-01	
1,3-Butadiene	2.67E-04	0.23
2,2,4-Trimethylpentane	2.50E-04	0.21
Acetaldehyde	8.36E-03	7.08
Acrolein	5.14E-03	4.36
Benzene	4.40E-04	0.37
Ethylbenzene	3.97E-05	0.03
Formaldehyde	5.28E-02	44.75
Methanol	2.50E-03	2.12
n-Hexane	1.11E-03	0.94
Naphthalene	7.40E-05	0.06
Phenol	2.40E-05	0.02
Toluene	4.08E-04	0.35
Xylene	1.84E-04	0.16
	7.16E-02	60.68

	C-1 Cat G3508 TALE (633 hp)	
	lbs/hr	tpy
VOC	0.43	1.89
HAPs	**lbs/hr**	**tpy**
1,3-Butadiene	9.8E-04	4.3E-03
2,2,4-Trimethylpentane	9.2E-04	4.0E-03
Acetaldehyde	3.1E-02	1.3E-01
Acrolein	1.9E-02	8.3E-02
Benzene	1.6E-03	7.1E-03
Ethylbenzene	1.5E-04	6.4E-04
Formaldehyde	1.9E-01	8.5E-01
Methanol	9.2E-03	4.0E-02
n-Hexane	4.1E-03	1.8E-02
Naphthalene	2.7E-04	1.2E-03
Phenol	8.8E-05	3.9E-04
Toluene	1.5E-03	6.6E-03
Xylene	6.7E-04	3.0E-03
Total	**0.26**	**1.15**

Example
2.50E-03 lb methanol / MMBtu / 0.118 lb / MMBtu VOC x 1.89 tpy VOC = 0.040 tpy methanol
2.50E-03 lb methanol / MMBtu / 0.118 lb/MMBtu VOC x 0.43 lb/hr VOC = 0.0092 lb/hr methanol

(1) US EPA AP-42, Fifth Edition, Table 3.2-2 Uncontrolled Emission Factors for 4-stroke lean-burn engines

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Sugarkane Central Battery 1
Compressor Engine Blowdown Emissions

	LP Gas Stream *
lb/day	1.14E+05
lb/hr	4.74E+03

Compressor Dowtime	2%
Flare Destruction Efficiency	98%

	Weight Fraction *	Speciated Emissions - VOC and HAPs tpy	lbs/hr	
VOC	0.383	3.18	0.73	[VOC]
		3.82	**0.87**	[VOC] - Incl. 20% Safety Factor
	Wt. Frac. VOC			
H_2S	7.1E-05	**2.7E-04**	**6.2E-05**	[H_2S] - Incl. 20% Safety Factor
Benzene	1.0E-03	4.0E-03	9.1E-04	
Toluene	1.8E-03	7.0E-03	1.6E-03	
Ethyl Benzene	-	-	-	
Xylene	1.0E-03	4.0E-03	9.1E-04	
n-Hexane	2.2E-02	8.5E-02	1.9E-02	
2,2,4 Trimethypentane	-	-	-	
Subtotal HAPS		**0.10**	**0.023**	[HAPS] - Incl. 20% Safety Factor

* Low pressure gas stream parameters, VOC weight fraction, and HAP weight fractions from "LP Gas" HYSYS Report.

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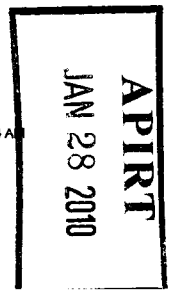
Sugarkane Central Battery 1
Condensate and Water Tanks - Standing and Working Losses

FIN: T-1,2,3,4,5,6, T-SLOP, T-WAT; EPN: F1MSS-VRU

Material	References :	Condensate	Condensate	Condensate	Condensate	Condensate	Condensate	Slop	Water
Tank ID	Fixed roof vertical (cone-type) storage tanks	T-1	T-2	T-3	T-4	T-5	T-6	T-SLOP	T-WAT
Atmospheric pressure (Pa, psia)	Avg. Atmospheric Pressure, EPA Tanks 4.0	14.33	14.33	14.33	14.33	14.33	14.33	14.33	14.33
Max Ambient Temp (Tax, F)	EPA AP-42 Table 7.1-7 or Tanks 4.0; San Antonio	79.51	79.51	79.51	79.51	79.51	79.51	79.51	79.51
Min Ambient Temp (Tan, F)	EPA AP-42 Table 7.1-7 or Tanks 4.0; San Antonio	57.73	57.73	57.73	57.73	57.73	57.73	57.73	57.73
Daily Average Amb. Temp (Taa, R)	EPA AP-42, Fifth Edition, Chapter 7	528.29	528.29	528.29	528.29	528.29	528.29	528.29	528.29
Daily Ambient Temp Range (dTa)	EPA AP-42, Fifth Edition, Chapter 7	21.78	21.78	21.78	21.78	21.78	21.78	21.78	21.78
Solar Paint Absorptance Factor (alpha, α)	AP-42 Table 7.1-6	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Solar Insolation Factor (I, Btu/ft^2*day)	AP-42 Table 7.1-7 or Tanks 4.0; San Antonio	1569	1569	1569	1569	1569	1569	1569	1569
Daily vapor temp. range (dTv, R)	*Delta Tv = 0.72 x Delta Ta + 0.028 x alpha x I*	45.56	45.56	45.56	45.56	45.56	45.56	45.56	45.56
Liquid Bulk Temp (Tb, R)	*Tb = Taa + 6 x alpha - 1*	531.37	531.37	531.37	531.37	531.37	531.37	531.37	531.37
Daily Avg Liq surf temp (Tla, R)	*Tla = (0.44 x Taa) + (0.56 x Tb) + (0.0079 x alpha x I)*	538.44	538.44	538.44	538.44	538.44	538.44	538.44	538.44
Daily Max Liq surf temp (Tlx, R)	*Tlx = Tla + (0.25 x Delta Tv)*	549.83	549.83	549.83	549.83	549.83	549.83	549.83	549.83
Daily Min Liq surf temp (Tln, R)	*Tln = Tla - (0.25 x Delta Tv)*	527.05	527.05	527.05	527.05	527.05	527.05	527.05	527.05
	Heated or Insulated?								
ANNUAL EMISSION RATE									
Vapor Molecular Weight, (Mv)	HYSIS calculated vMW	40.7	40.7	40.7	40.7	40.7	40.7	32.8	40.7
Annual net throughput (Q, bbl/yr)	5000 bbl/day cond; 100 bbl/day water; 15 bbl/day slop	304167	304167	304167	304167	304167	304167	5475	18250
Tank Maximum Liquid Volume, (V_{LX},ft^3)	V_{LX} = (3.14 / 4) x (D^2) x Hs	2826.00	2826.00	2826.00	2826.00	2826.00	2826.00	1177.50	2826.00
Turnover per year (N)	N = (5.614 x Q) / V_{LX}	604.24	604.24	604.24	604.24	604.24	604.24	26.10	36.25
Turnover factor (Kn)	AP-42 Fig. 7.1-18, Kn = (180 + N) / (6 x N) if N>36 or 1	0.22	0.22	0.22	0.22	0.22	0.22	1.00	0.99
Working loss product factor (Kp)	AP-42 Page 7.1-18 [0.75 for crude oils / all other, 1]	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Tank Shell Height (Hs, ft)		25.00	25.00	25.00	25.00	25.00	25.00	15.00	25.00
Liquid Height (Hl, ft)		12.50	12.50	12.50	12.50	12.50	12.50	7.50	12.50
Diameter (ft)		12.00	12.00	12.00	12.00	12.00	12.00	10.00	12.00
Roof Outage (Hro, ft)	cone-1/3 x Hr & Hr =tank radius x .0625	0.13	0.13	0.13	0.13	0.13	0.13	0.10	0.13
Vapor Space Outage (Hvo, ft)	Hvo = Hs - Hl + Hro	12.63	12.63	12.63	12.63	12.63	12.63	7.60	12.63
Vapor Space Volume (Vv, ft^3)	Vv = (3.14 / 4) x (D^2) x Hvo	1427.85	1427.85	1427.85	1427.85	1427.85	1427.85	597.23	1427.85
Vapor Density (Wv, lb/ft^3)	Wv = (Mv x Pva) / (R x Tla); [R = 10.731 (psia x ft^3) / (lb-mole^{3}R)]	0.0969	0.0969	0.0969	0.0969	0.0969	0.0969	0.5735	0.0969
VP @daily max liq surf temp (Pvx, psia)	ConocoPhillips HYSIS program -vapor pressures	16.3571	16.3571	16.3571	16.3571	16.3571	16.3571	117.9955	16.3571
VP @daily min liq surf temp (Pvn, psia)		11.4807	11.4807	11.4807	11.4807	11.4807	11.4807	86.2111	11.4807
Daily Vapor Pressure Range (dPv,psia)	Delta Pv = Pvx - Pvn	4.8764	4.8764	4.8764	4.8764	4.8764	4.8764	31.7843	4.8764
Breather Vent P Set Range, Delta P_B, psi	Delta P_B = P_{BP} - P_{BV} [BV pressure setting - BV vacuum setting]	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
VP @ daily avg liq surf temp (Pva, psia)	HYSIS program calculated	13.7460	13.7460	13.7460	13.7460	13.7460	13.7460	101.1157	13.7460
Vapor Space Expansion Factor (Ke)	Ke = (Delta Tv / Tla) + (Delta Pv - Delta P_B) / (Pa - Pva); AP42	7.80	7.80	7.80	7.80	7.80	7.80	-0.28	7.80
Vented Vapor Saturation factor (Ks)	Ks = 1 / (1 + (0.053 x Pva x Hvo))	0.10	0.10	0.10	0.10	0.10	0.10	0.02	0.10
Standing Storage Loss (Ls, lb/yr)	Ls = 365 x Vv x Wv x Ke x Ks	38637.58	38637.58	38637.58	38637.58	38637.58	38637.58	0.00	38637.58
Working Loss (Lw, lb/yr)	Lw = 0.0010 x Mv x Pva x Q x Kn x Kp	27628.09	27628.09	27628.09	27628.09	27628.09	27628.09	13606.31	7618.43
Total Losses (Lt, lb/yr)	Lt = Ls + Lw	66265.68	66265.68	66265.68	66265.68	66265.68	66265.68	13606.31	46256.01
Total Losses (Lt", tpy)	*Lt" = Lt / 2000*	33.1328	33.1328	33.1328	33.1328	33.1328	33.1328	6.8032	23.1280
VOC weight fraction		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.01

CALCULATED EMISSION RATES - SUMMARY									**TOTAL**
VOC Annual Emission Rate - TPY Uncontrolled	33.13	33.13	33.13	33.13	33.13	33.13	6.80	0.23	205.83
Controlled with VRU - 95% C.E. [remeinder of stream to flare]	1.66	1.66	1.68	1.66	1.66	1.66	0.34	1.2E-02	10.29
Controlled with Flare - 98% D.E.	0.033	0.033	0.033	0.033	0.033	0.033	0.0068	2.3E-04	0.21
Controlled with Flare - 98% D.E. - Including 20% safety factor	**0.040**	**0.040**	**0.040**	**0.040**	**0.040**	**0.040**	**0.0082**	**2.8E-04**	**0.25**

MAXIMUM HOURLY EMISSION RATE TCEQ Guidance Doc. RG-166, Draft February 2001	Condensate	Condensate	Condensate	Condensate	Condensate	Condensate	Slop	Water	
VP @hourly max liq surf temp (Phlx, psia)	16.36	16.36	16.36	16.36	16.36	16.36	118.00	16.36	
Maximum filling rate (FRm, gal/hr)	1458.33	1458.33	1458.33	1458.33	1458.33	1458.33	26.25	52.5	
Wking loss @ Max. liq storage temp (Lw-max, *Lw-max = 0.0010 x Mv x Pvx x Q x 1 $_{(Kn)}$ x Kp*	151982.80	151982.80	151982.80	151982.80	151982.80	151982.80	15877.68	9118.97	
Max. VOC Hrly. Emission Rate (Lmax, lbs/hr) *Lmax = (Lw-max x FRm) / (N x V_{LX} x (7.48 gal / ft^3))*	17.35	17.35	17.35	17.35	17.35	17.35	1.81	6.2E-03	105.93
Controlled with VRU - 95% C.E. [ramainder of stream to flare]	0.017	0.017	0.017	0.017	0.017	0.017	0.002	6.2E-06	0.11
Controlled with Flare - 98% D.E.	3.5E-04	3.5E-04	3.5E-04	3.5E-04	3.5E-04	3.5E-04	3.6E-05	1.2E-07	0.0021
Controlled with Flare - 98% D.E. - Including 20% safety factor	**4.2E-04**	**4.2E-04**	**4.2E-04**	**4.2E-04**	**4.2E-04**	**4.2E-04**	**4.4E-05**	**1.5E-07**	**0.0025**



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Sugarkane Central Battery 1
Hazardous Air Pollutant (HAP) and H_2S Emissions from Condensate & Produced Water Tanks

Working and Standing Losses

			T-SLOP Slop		T-WAT Water		T-1, 2, 3, 4, 5, 6 Condensate			Total	
		VOC - TPY	8.2E-03		2.8E-04		3.3E-02				
		VOC - Lb/hr	4.4E-05		1.5E-07		3.5E-04				
	Wt Fraction [1] Slop	Wt Fraction [2] Cond/Water	T-SLOP Slop lb/hr	tpy	T-WAT Water lb/hr	tpy	T-1, 2, 3, 4, 5, 6 Condensate lb/hr	tpy		lb/hr	tpy
H_2S	7.12E-05	7.12E-05	3.1E-09	5.8E-07	1.1E-11	2.0E-08	2.5E-08	2.4E-06		**1.5E-07**	**1.5E-05**
n-Hexane	8.69E-02	2.50E-02	3.8E-06	7.1E-04	3.7E-09	6.9E-06	8.7E-06	8.3E-04		5.6E-05	5.7E-03
2,2,4-Trimethylpentane	4.19E-02	-	1.8E-06	3.4E-04	-	-	-	-		1.8E-06	3.4E-04
Benzene	4.43E-03	1.26E-03	1.9E-07	3.6E-05	1.9E-10	3.5E-07	4.4E-07	4.2E-05	x6	2.8E-06	2.9E-04
Toluene	1.36E-02	1.97E-03	5.9E-07	1.1E-04	2.9E-10	5.5E-07	6.8E-07	6.5E-05		4.7E-06	5.0E-04
Ethylbenzene	5.07E-04	-	2.2E-08	4.1E-06	-	-	-	-		2.2E-08	4.1E-06
Xylene	7.60E-03	7.02E-04	3.3E-07	6.2E-05	1.1E-10	1.9E-07	2.4E-07	2.3E-05		1.8E-06	2.0E-04
TOTAL HAPs			**6.7E-06**	**1.3E-03**	**4.3E-09**	**8.0E-06**	**1.0E-05**	**9.6E-04**		**6.7E-05**	**7.0E-03**

(1) Slop Tank HAP constituent weight fractions from "Slop Tank" HYSYS report.
(2) Condensate and Water Tank HAP constituent weight fractions from "HC Tank Vapors" HYSYS report.

3/4/2009 4:59 PM

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HYSIS MODEL - SUMMARY - FLASHING LOSSES

PREDICTED FIRST YEAR VOC EMISSIONS
BASED ON STEADY MAXIMUM CONDENSATE RATES AND YIELD

Sugarkane Central Battery 1. (770 psig - 80 Deg F and 5000 BCPD) Model assuming drop to atmospheric conditions

3/4/2009 16:58

ITEMS IN YELLOW FROM HYSIM RUN

	N2 Mol%	CO2 Mol%	C1 Mol%	C2 Mol%	ABCPD	STBCPD	VENT SCFD	#/DAY	PRESSURE psia
FLASH GAS	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0	0	NA
TANK VENT	0.00%	1.78%	13.15%	29.30%	NA	NA	377,035	43584	15

Initial Condensate Production

INPUT HERE 5000 STBCPD

No Declining Production (Yes or No)

FIRST STAGE SEPARATOR PRESSURE 64.70

Month	STBCPD	Flash Gas SCFD	Total FG HC TONS/month	FG VOC TONS/month	Tank Flash Gas SCFD	Total Tank HC TONS/month	Tank VOCs from Flashing TONS/month	Loading Loss* HC TP month	Standing Loss* VOC TP month	Working Loss* VOC TP month	ESTIMATED Total VOC TONS/month
1	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
2	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
3	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
4	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
5	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
6	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
7	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
8	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
9	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
10	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
11	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
12	5000	0	0	0.00	377035	629	350.42	27.65	1.48	4.10	383.65
								331.80	17.81	49.15	

RATE INFORMATION

Total Annual Condensate Throughput	1824000.00	STB of Condensate
Average Annual Condensate Rate	5000.00	STBCPD
Total Annual Flash Gas Vented	0	SCF
Average Annual Flash Gas Rate	0	SCFD
Total Annual Hydrocarbon Flash Gas Vented	0	TPY
Total Annual Tank Flash Gas Vented	137,542,287	SCF
Average Annual Tank Flash Gas Rate	377036	SCFD
Total Annual Hydrocarbon Tank Flash Gas Vented	7552.24	TPY

STREAM PROPERTIES

From Hysim

	Condensate	Flash Gas	Tank Vent
Specific gravity	na	na	1.40
Molecular Weight	118.70	na	40.73
API Gravity	60.88	na	na
RVP @100F psia	12.64	na	na
Dry Btu/cuft	na	0.00	2265.76

	Flash Gas	Tank Vent
N2 Wt. %	0.00%	0.00%
CO2 Wt %	0.00%	1.92%
H2O Wt.%	0.00%	0.04%
C1 Wt%	0.00%	5.18%
C2 Wt %	0.00%	21.64%
VOC WT %	100.00%	71.22%

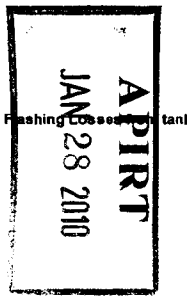
PREDICTED VOC INFORMATION

ANNUAL TOTAL FLASH GAS VOC	0.00	TPY
ANNUAL TANK VENT GAS VOC	4205.09	TPY
ANNUAL UNCONTROLLED TANK STANDING, WORKING & LOADING VOC	398.76	TPY
ESTIMATED TOTAL UNCONTROLLED STATION VOC	4603.85	TPY

STANDING, LOADING AND WORKING LOSS FACTORS*

A 10.37	Ke 10.36
B 4176.17	N 4527.06
Pva 14.29	Kn 0.17
Pv 4.34	Loading Mw 49.45
Wv 0.10	

* Based on EPEC Version 1.06 using factors for South Texas



C.E. - VRU 95%
C.E - Flare 98%

		Uncontrolled Flashing VOC Losses tpy	Controlled Flashing VOC losses tpy	Controlled Flashing VOC losses lb/hr
Total Flashing Losses for all tanks		4205.09		
	Post-VRU		210.25	48.00
	Post-flare		4.21	0.96
Post-flare - Incl. 20% Safety Factor			5.05	1.15
T-1	Condensate		0.84	0.16
T-2	Condensate		0.84	0.16
T-3	Condensate		0.84	0.16
T-4	Condensate		0.84	0.16
T-5	Condensate		0.84	0.16
T-6	Condensate		0.84	0.16
T-SLOP	Slop		Incl. Above *	Incl. Above *
T-WAT	Water		Incl. Above *	Incl. Above *

* Flashing emissions for the Slop and Water tanks are included in the condensate tank emissions

ConocoPhillips Company

Sugarkane Central Battery 1
Hazardous Air Pollutant (HAP) and H_2S Emissions from Condensate & Produced Water Tanks

Flashing Losses

	T-SLOP, T-WAT [2] Slop/Water	T-1, 2, 3, 4, 5, 6 Condensate
VOC - TPY	Incl.	0.84
VOC - lb/hr	Incl.	0.16

		T-MIX, T-WAT [2] Mixed/Water		T-1, 2, 3, 4, 5, 6 Condensate			Total	
	Wt Fraction [1]	lb/hr	tpy	lb/hr	tpy		lb/hr	tpy
H_2S	7.12E-05	Incl.	Incl.	1.2E-05	6.0E-05		**7.0E-05**	**3.6E-04**
n-Hexane	2.50E-02	Incl.	Incl.	4.1E-03	2.1E-02		2.5E-02	1.3E-01
2,2,4-Trimethylpentane	-	Incl.	Incl.	-	-		-	-
Benzene	1.26E-03	Incl.	Incl.	2.1E-04	1.1E-03	x 6	1.2E-03	6.4E-03
Toluene	1.97E-03	Incl.	Incl.	3.2E-04	1.7E-03		1.9E-03	9.9E-03
Ethylbenzene	-	Incl.	Incl.	-	-		-	-
Xylene	7.02E-04	Incl.	Incl.	1.2E-04	5.9E-04		6.9E-04	3.5E-03
TOTAL HAPs		**Incl.**	**Incl.**	**0.0048**	**0.024**		**0.029**	**0.15**

(1) Tank HAP constituent weight fractions from "HC Tank Vapors" HYSYS report.
(2) Slop tank and Water tank flashing emissions are included in the condensate tank flashing emission totals.

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ConocoPhillips Company

Sugarkane Central Battery 1 **FIN/ EPN: F1MSS-VRU**
Combustion Emissions from Diverting Tank Emissions to flare during VRU downtime

	Tank & Loading Emissions			
	tpy	lb/hr	MW	scfm
Flashing Losses	4205.09	960.07		
Working & Standing	205.83	105.93		
Loading	303.66	58.72		
Total	4714.57	1124.72	40.73	178.10

scf/hr		Btu/scf			
10686	x	**2108**	=	**22,529,797.4**	Total Stream Btu/hr

(1) Using PV=nRT
mRT/60*mw*P=V
[m=lb/hr;P=14.696 psia; R=10.73;T=530 °R]

V, scfm = 1124.72 * 10.73*530/(60*MW*14.696)
V, scfm = 178.10 -Calculated

7.1E-05 H_2S Wt. Frac VOC
438 hrs/yr (5% of 8760 hours to account for 5% VRU downtime)

	Emissions (2)		Emissions Incl. 20% Safety Factor	
	lb/hr	tpy	lb/hr	tpy
NOx	1.53	0.34	**1.84**	**0.40**
CO	8.34	1.83	**10.00**	**2.19**
SO_2	0.040	0.0087	**0.048**	**0.010**
H_2S	4.2E-04	9.2E-05	**5.1E-04**	**1.1E-04**

Example Calculations

NOx 0.068 lb/MMBtu x 22.529797 MM Btu/hr = 1.53 lb/hr
CO 0.37 lb/MMBtu x 22.529797 MM Btu/hr = 8.30 lb/hr
SO_2 10686 cf/hr x 0.0022 mol% H2S x 1 lb-mole/379 cf x 1 lb-mole SO2/lb-mole H2S x 64 lb SO2/lb-mole SO2 = 0.040 lb/hr
H_2S 10686 cf/hr x 0.0022 mol% H2S x 1 lb-mole/379 cf x 34 lb/lb-mole x (1 - 0.98 D.E.) = 4.2E-04 lb/hr

(2) NOx & CO Emissions Factors from EPA AP-42 Emission Factors for Flare Combustion, Fifth Edition, Table 13.5-1, 9/91 (reformatted 1/95)

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ConocoPhillips Company

Sugarkane Central Battery 1 **FIN/ EPN: F2MSS-BDWN**
Combustion Emissions from Diverting Low Pressure Gas to Flare During Compressor Downtime

	Low Pressure Gas Stream			
	MMscf/day	lb/hr	MW	scfm
Gas Flow to Flare	1.57	4738	27.44	1113.50

scf/hr		Btu/scf			
66810	x	**1420**	=	**94,844,408.1**	Total Stream Btu/hr

(1) Using PV=nRT
mRT/60*mw*P=V
[m=lb/hr;P=14.696 psia; R=10.73;T=530 °R]

V, scfm = 4737.50 * 10.73*530/(60*MW*14.696)
V, scfm = 1113.50 -Calculated

7.1E-05 H_2S Wt. Fraction VOC
175 hr/yr (2% of 8760 hours to account for 2% compressor downtime)

	Emissions (2)		Emissions Incl. 20% Safety Factor	
	lb/hr	tpy	lb/hr	tpy
NOx	6.45	0.56	**7.74**	**0.68**
CO	35.09	3.07	**42.11**	**3.69**
SO_2	0.25	0.022	**0.30**	**0.026**
H_2S	2.6E-03	2.3E-04	**3.2E-03**	**2.8E-04**

Example Calculations

NOx 0.068 lb/MMBtu x 94.844408 MM Btu/hr = 6.45 lb/hr
CO 0.37 lb/MMBtu x 94.844408 MM Btu/hr = 35.09 lb/hr
SO_2 66810 cf/hr x 0.0022 mol% H2S x 1 lb-mole/379 cf x 1 lb-mole SO2/lb-mole H2S x 64 lb SO2/lb-mole SO2 = 0.25 lb/hr
H_2S 66810 cf/hr x 0.0022 mol% H2S x 1 lb-mole/379 cf x 34 lb/lb-mole x (1 - 0.98 D.E.) = 2.6E-03 lb/hr

(2) NOx & CO Emissions Factors from EPA AP-42 Emission Factors for Flare Combustion, Fifth Edition, Table 13.5-1, 9/91 (reformatted 1/95)

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Liaise

ConocoPhillips Company

Sugarkane Central Battery 1
Flare Pilot Emissions

FIN/EPN: F1MSS-VRU, F2MSS-BDWN

Parameters F1MSS-VRU	Parameters F2MSS-BDWN	
0.016	0.022	MMBtu/hr Heat Input (calculated)
8760	8760	Operating Hours
1081	1081	Btu/cf - Gas fuel heating value (LHV)
0.131	0.175	MMscf/yr - calculated gas fuel usage (conservative, based on low heating value)
15.0	20.0	scf/hr

Emission Factors (lb/MMscf)*

NOx	CO	VOC	SO_2	PM/PM_{10}
100.0	84.0	5.5	0.6S 4.13	7.6

EPN	Pounds per hour (lbs/hr) NOx	CO	VOC	SO_2	PM/PM_{10}	Tons per year (tpy) NOx	CO	VOC	SO_2	PM/PM_{10}
F1MSS-VRU	1.5E-03	1.3E-03	8.3E-05	6.2E-05	1.1E-04	0.0066	0.0055	3.6E-04	2.7E-04	5.0E-04
F2MSS-BDWN	2.0E-03	1.7E-03	1.1E-04	8.3E-05	1.5E-04	0.0088	0.0074	4.8E-04	3.6E-04	6.7E-04
TOTAL	3.5E-03	2.9E-03	1.9E-04	1.4E-04	2.7E-04	1.5E-02	1.3E-02	8.4E-04	6.3E-04	1.2E-03
TOTAL (Incl. 20% Safety Factor)	**4.2E-03**	**3.5E-03**	**2.3E-04**	**1.7E-04**	**3.2E-04**	**1.8E-02**	**1.5E-02**	**1.0E-03**	**7.6E-04**	**1.4E-03**

Example Calculation

100 lb NOx /MMscf x 0.019 MMBtu/hr x 1 cf / 1260 Btu = 0.0015 lb/hr NOx

Emission Factors from AP-42 Fifth Edition, Table 1.4-1, 1.4-2, 2/98; 7/98. SO2 factor adjusted using ratio of actual gas suflur content to 2000 gr/MMscf using method outlines in AP-42 Table 1.4-2 footnote d. Maximum H2S = 13750 gr/MMscf / 2000 gr/MMscf = S = 6.875 ; 0.6*S = 4.125

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4.2 Permit By Rule 30 TAC §106.8

The requirements for claiming this PBR are duplicated below in plain type. The ConocoPhillips documentation of compliance with these requirements is in **bold type.**

(a) Owners or operators of facilities and sources that are de minimis as designated in §116.119 of this title (relating to De Minimis Facilities or Sources) are not subject to this section.

The subject sources are not classified as a De Minimus Source and are, therefore subject to the requirements of this section.

(b) Owners or operators of facilities operating under a permit by rule (PBR) in Subchapter C of this chapter (relating to Domestic and Comfort Heating and Cooling) or under those PBRs that only name the type of facility and impose no other conditions in the PBR itself do not need to comply with specific recordkeeping requirements of subsection (c) of this section. A list of these PBRs will be available through the commission's Austin central office, regional offices, and the commission's website. Upon request from the commission or any air pollution control program having jurisdiction, claimants must provide information that would demonstrate compliance with §106.4 of this title (relating to Requirements for Permitting by Rule), or the general requirements, if any, in effect at the time of the claim, and the PBR under which the facility is authorized.

ConocoPhillips will comply with the recordkeeping requirements as stated in subsection (c) of this section.

(c) Owners or operators of all other facilities authorized to be constructed and operate under a PBR must retain records as follows:

(1) maintain a copy of each PBR and the applicable general conditions of §106.4 of this title or the general requirements, if any, in effect at the time of the claim under which the facility is operating. The PBR and general requirements claimed should be the version in effect at the time of construction or installation or changes to an existing facility, whichever is most recent. The PBR holder may elect to comply with a more recent version of the applicable PBR and general requirements;

ConocoPhillips will maintain a copy of each PBR and the applicable general conditions of §106.4 of this title at its field office in Fulshear, TX.

(2) maintain records containing sufficient information to demonstrate compliance with the following:

(A) all applicable general requirements of §106.4 of this title or the general requirements, if any, in effect at the time of the claim; and

(B) All applicable PBR conditions;

ConocoPhillips will maintain records containing sufficient information to demonstrate compliance with applicable PBR conditions.

(3) Keep all required records at the facility site. If however, the facility normally operates unattended, records must be maintained at an office within Texas having day-to-day operational control of the plant site;

The Sugarkane Facility is operated unattended; therefore, ConocoPhillips will maintain records at the field office located in Fulshear, Texas.

(4) Make the records available in a reviewable format at the request of personnel from the commission or any air pollution control program having jurisdiction;

ConocoPhillips will make records available to the commission or any air pollution control program having jurisdiction.

(5) Beginning April 1, 2002, keep records to support a compliance demonstration for any consecutive 12-month period. Unless specifically required by a PBR, records regarding the quantity of air contaminants emitted by a facility to demonstrate compliance with §106.4 of this title prior to April 1, 2002 are not required under this section; and

ConocoPhillips will maintain records to support a compliance demonstration for any consecutive 12-month period. See §106.4 documentation.

(6) For facilities located at sites designated as major in accordance with §122.10(13) of this title (relating to General Definitions) or subject to or potentially subject to any applicable federal requirement, retain all records demonstrating compliance for at least five years. For facilities located at all other sites, all records demonstrating compliance must be retained for at least two years. These record retention requirements supersede any retention conditions of an individual PBR.

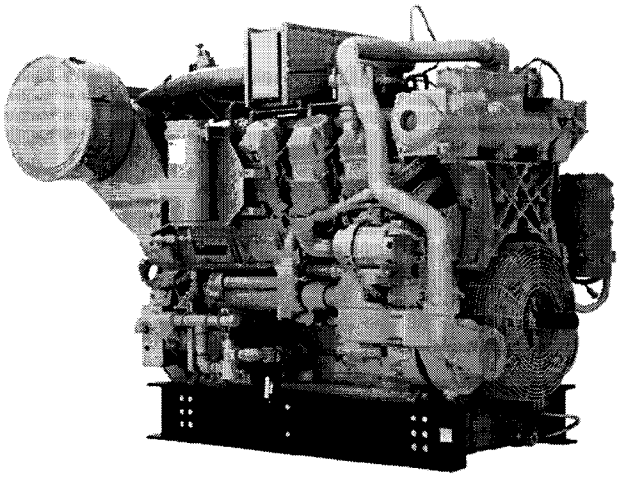
Records will be maintained for at least two years as the Sugarkane Facility is not designated as major in accordance with §122.10(13).

Source Note: The provisions of this §106.8 adopted to be effective November 1, 2001, 26 TexReg 8518

CATERPILLAR®

G3508 LE Gas Petroleum Engine

500 bkW (670 bhp)
1400 rpm



Shown with Optional Equipment

CAT® ENGINE SPECIFICATIONS

V-8, 4-Stroke-Natural Gas

Bore	170 mm (6.7 in)
Stroke	190 mm (7.5 in)
Displacement	34.5 L (2,105 cu in)
Compression Ratio	8:1
Aspiration	Turbocharged-Aftercooled
Combustion	Low Emission
Rotation (from flywheel end)	Counterclockwise
Flywheel & Flywheel Housing	SAE No. 00
Flywheel Teeth	183
Shipping Weight (Dry)	5432 kg (11,950 lb)
Power Density	17.81 lb/hp
Power per Displacement	19.45 bhp/L
Capacity for Liquids	
Cooling System[1]	114 L (30 U.S. gal)
Lube Oil System (refill)	231 L (61 U.S. gal)
Oil Change Interval[2]	1000 hours
Governor, Ignition, Protection	ADEM™ A3
Air/Fuel Ratio Control	ADEM™ A3

[1]Engine only.
[2]Can be extended through S•O•S℠ program

STANDARD EQUIPMENT

Air Inlet System
Remote air inlet adapters

Charging System
Battery chargers

Cooling System
Jacket water thermostats and housing — full open temperature 98°C (208°F)
Jacket water pump — gear driven, centrifugal, non-self-priming
Aftercooler water pump — gear driven, centrifugal, non-self-priming
Aftercooler core for sea-air atmosphere
Aftercooler thermostats and housing — full open temperature 35°C (95°F)
Aftercooler — raw water, cleanable

Exhaust System
Exhaust manifolds — watercooled

Flywheels & Flywheel Housings
SAE No. 00 flywheel
SAE No. 00 flywheel housing
SAE standard rotation

Fuel System
Gas pressure regulator
Natural gas carburetor
Fuel gas shut-off valve (24V DC)

Instrumentation
Advisor panel
Advisor interconnect harness

Lubrication System
Crankcase breathers — top mounted
Oil cooler
Oil filter — RH
Oil pan — shallow
Oil sampling valve
Turbo oil accumulator

Mounting System
Rails, engine mounting

Power Take-Offs
Front housing — two-sided
Front lower LH accessory drive

Protection System
Electronic shutoff system
Gas shutoff valve

General
Paint — Caterpillar yellow
Vibration damper and guard

OPTIONAL EQUIPMENT

Air Inlet System
Remote air inlet adapters

Charging System
Battery chargers

Cooling System
Aftercooler core
Thermostatic valves
Connections
Expansion and overflow tank
Water level switch gauge

European Certifications
European Union certifications

Exhaust System
Flexible fittings
Elbows
Flanges
Flange and exhaust expanders
Mufflers

Fuel System
Fuel filter

Instrumentation
Customer communication modules

Lubrication System
Oil filters — duplex
Oil pan drain
Oil level regulator
Sump pumps
Lubricating oil

Mounting System
Rails
Vibration isolators

Power Take-Offs
Auxiliary drive shaft
Auxiliary drive pulleys
Front stub shaft
Pulleys

Protection System
Gas valve
Explosion relief valves

Starting System
Air pressure regulator
Air silencer
JW heaters
Battery sets (24-volt dry)
Battery accessories

General
Flywheel guard removal
Engine barring group
Premium 8:1 pistons

TECHNICAL DATA

G3508 LE Gas Petroleum Engine — 1400 rpm

		DM8621-01
Engine Power		
@ 100% Load	bkW (bhp)	500 (670)
@ 75% Load	bkW (bhp)	375 (502)
Engine Speed	rpm	1400
Compression Ratio		8:1
Emissions*		
NO_x	g/bkW-hr (g/bhp-hr)	2.01 (1.50)
CO	g/bkW-hr (g/bhp-hr)	2.47 (1.84)
Total Hydrocarbons	g/bkW-hr (g/bhp-hr)	4.08 (3.04)
Fuel Consumption**		
@ 100% Load	MJ/bkW-hr (Btu/bhp-hr)	10.63 (7510)
@ 75% Load	MJ/bkW-hr (Btu/bhp-hr)	11.22 (7936)
Heat Balance		
Heat Rejection to Jacket Water		
@ 100% Load	bkW (Btu/min)	319.8 (18,204)
@ 75% Load	bkW (Btu/min)	282 (16,013)
Heat Rejection to Aftercooler		
@ 100% Load	bkW (Btu/min)	80 (4555)
@ 75% Load	bkW (Btu/min)	56.1 (3191)
Heat Rejection to Exhaust		
@ 100% Load (LHV to 77° F / 25° C)	bkW (Btu/mn)	481.9 (27,408)
@ 75% Load (LHV to 77°) (LHV to 77° F / 25° C)	bkW (Btu/mn)	373 (21,204)
Exhaust System		
Exhaust Gas Flow Rate (@ stack temp.,14.5 psig)		
@ 100% Load	m³/min (cfm)	115.76 (4088)
@ 75% Load	m³/min (cfm)	89.57 (3163)
Exhaust Stack Temperature		
@ 100% Load	°C (°F)	529 (985)
@ 75% Load	°C (°F)	525 (977)
Intake System		
Air Inlet Flow Rate		
@ 100% Load	m³/min (scfm)	39.53 (1396)
@ 75% Load	m³/min (scfm)	30.72 (1085)
Gas Pressure	kPag (psig)	242-276 (35-40)

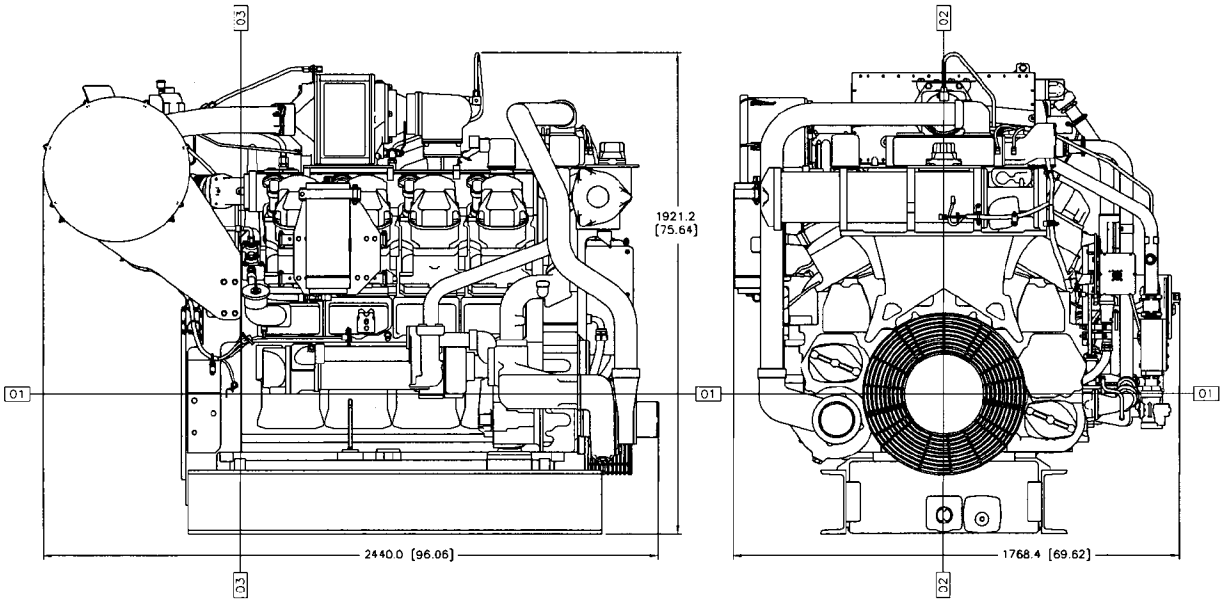
*at 100% load and speed
**ISO 3046/1

CATERPILLAR®

G3508 LE GAS PETROLEUM ENGINE

500 bkW (670 bhp)

DIMENSIONS



DIMENSIONS		
Length	mm (in)	2440.0 (96.06)
Width	mm (in)	1768.4 (69.62)
Height	mm (in)	1921.2 (75.64)
Shipping Weight	kg (lb)	5432 (11,950)

Note: General configuration not to be used for installation. See general dimension drawings for detail (drawing #315-3136).

Dimensions are in mm (inches).

RATING DEFINITIONS AND CONDITIONS

Engine performance is obtained in accordance with SAE J1995, ISO3046/1, BS5514/1, and DIN6271/1 standards.

Transient response data is acquired from an engine/generator combination at normal operating temperature and in accordance with ISO3046/1 standard ambient conditions. Also in accordance with SAE J1995, BS5514/1, and DIN6271/1 standard reference conditions.

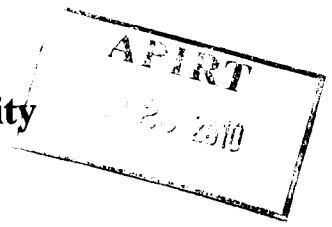
Conditions: Power for gas engines is based on fuel having an LHV of 33.74 kJ/L (905 Btu/cu ft) at 101 kPa (29.91 in. Hg) and 15° C (59° F). Fuel rate is based on a cubic meter at 100 kPa (29.61 in. Hg) and 15.6° C (60.1° F). Air flow is based on a cubic foot at 100 kPa (29.61 in. Hg) and 25° C (77° F). Exhaust flow is based on a cubic foot at 100 kPa (29.61 in. Hg) and stack temperature.

Performance Numbers: DM8621-01
LEHW8143-02 (7-09)

APPENDIX E

ENGINE SPECIFICATIONS

Texas Commission on Environmental Quality
Air Quality Permit by Rule Registration



ConocoPhillips Company
Sugarkane Central Battery 1

Live Oak County, Texas

Prepared for:
ConocoPhillips Company
P.O. Box 2197
3WL-15060
Houston, TX 77252

Prepared by

TRC

10011 Meadowglen Lane, Suite 100
Houston, TX 77042
Telephone: 713-244-1050
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January 2010

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- 30 TAC §106.352 Checklist
- 30 TAC §106.492 Checklist
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APPENDIX A

TCEQ FORMS AND CHECKLISTS

- Core Data Form
- Form PI-7CERT
- 30 TAC §106.4 Checklist
- 30 TAC §106.352 Checklist
- 30 TAC §106.492 Checklist
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APPENDIX C

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Sugarkane Central Battery 1
HYSYS Report for Condensate Tank Flashing Losses
Material Stream: HC Tank Vapors Fluid Package: Basis-1

Property Package: Peng-Robinson

CONDITIONS

	Overall	Vapour Phase	Liquid Phase
Vapour / Phase Fraction	1	1	0
Temperature: (F)	39.82	39.82	39.82
Pressure: (psia)	14.95	14.95	14.95
Molar Flow (MMSCFD)	9.39E-03	9.39E-03	0
Mass Flow (lb/day)	1008	1008	0
Std Ideal Liq Vol Flow (barrel/day)	6.051	6.051	0
Molar Enthalpy (Btu/lbmole)	-4.58E+04	-4.56E+04	-1.06E+05
Molar Entropy (Btu/lbmole-F)	42.7	42.7	39.77
Heat Flow (Btu/hr)	-4.82E+04	-4.82E+04	0
Liq Vol Flow @Std Cond (barrel/day)	8.009	8.009	0

PROPERTIES

	Overall	Vapour Phase	Liquid Phase
Act. Gas Flow (ACFM)	6.056	6.056	
Act. Liq. Flow (USGPM)			
Act. Volume Flow (barrel/day)	1553	1553	0
Avg. Liq. Density (lbmole/ft3)	0.7283	0.7283	0.3764
Cp/(Cp - R)	1.142	1.142	1.036
Cp/Cv	1.152	1.152	1.036
Cp/Cv (Ent. Method)	0.2841	1.154	
Cv (Ent. Method) (Btu/lbmole-F)	13.81	13.81	
Cv (Semi-Ideal) (Btu/lbmole-F)	13.94	13.94	54.57
Heat Capacity (Btu/lbmole-F)	15.93	15.93	56.56
Heat of Vap. (Btu/lbmole)	1.17E+04		
Kinematic Viscosity (cSt)	4.457	4.457	1.265
Liq. Mass Density (Std. Cond) (lb/ft3)	29.87	29.87	45.23
Liq. Vol. Flow (Std. Cond) (barrel/day)	8.009	8.009	0
Liq. Vol. Flow - Sum(Std. Cond) (barrel/day)	8.009	8.009	0
Liquid Fraction	0	0	1
Lower Heating Value (Btu/lbmole)	7.98E+05	7.98E+05	2.27E+06
Mass Cv (Btu/lb-F)	0.3394	0.3394	0.4597
Mass Cv (Ent. Method) (Btu/lb-F)	0.339	0.339	
Mass Cv (Semi-Ideal) (Btu/lb-F)	0.3424	0.3424	0.4597
Mass Density (lb/ft3)	1.18E-01	1.16E-01	45.82
Mass Enthalpy (Btu/lb)	-1148	-1148	-891.6
Mass Entropy (Btu/lb-F)	1.049	1.048	0.335
Mass Heat Capacity (Btu/lb-F)	0.3911	0.3911	0.4764
Mass Heat of Vap. (Btu/lb)	286		
Mass Lower Heating Value (Btu/lb)	1.96E+04	1.96E+04	1.91E+04
Molar Density (lbmole/ft3)	2.84E-03	2.84E-03	0.366
Molar Volume (ft3/lbmole)	352.4	352.4	2.591
Molecular Weight	40.73	40.73	118.7
Phase Fraction [Vol. Basis]		1	
Phase Fraction [Mass Basis]	2.122e-314	1	0
Partial Pressure of CO2 (psia)	0.2658		
Specific Heat (Btu/lbmole-F)	15.93	15.93	56.56
Std. Gas Flow (MMSCFD)	9.39E-03	9.39E-03	0
Std. Ideal Liq. Mass Density (lb/ft3)	29.68	29.66	44.69
Z Factor		0.9829	7.23E-03
Watson K	15.32	15.32	12.57
User Property			
Phase Fraction [Molar Basis]	1	1	0
Surface Tension (dyne/cm)			21.41
Thermal Conductivity (Btu/hr-ft-F)	1.01E-02	1.01E-02	7.18E-02
Viscosity (cP)	8.25E-03	8.25E-03	0.9434
Cv (Btu/lbmole-F)	13.82	13.82	54.57
HC Dew Point[Gas] (F)	39.21	39.21	
Higher Heating Value[Gas] (MMBtu/bbl)	1.31E-02	1.31E-02	3.65E-02
Lower Heating Value[Gas] (MMBtu/bbl)	1.20E-02	1.20E-02	3.39E-02
Mass Density (Std. Cond)[Gas] (API)	8.06E+04	8.06E+04	2.36E+04
Water Dew Point[Gas] (F)	-8.12	-8.12	
Wobbe Index[Gas] (MMBtu/bbl)	1.09E-02	1.09E-02	1.66E-02
Cost Based on Flow (Cost/s)	0	0	0
Partial Pressure of H2S (psia)	0		
Reid VP at 37.8 C (psia)	394	394	22.07
True VP at 37.8 C (psia)	643.4	643.4	31.24

COMPOSITION

Sugarkane Central Battery 1
HYSYS Report for Condensate Tank Flashing Losses
Material Stream: HC Tank Vapors Fluid Package: Basis-1

Overall Phase	Vapour Fraction 1.0000					Normalized		
COMPONENTS	MOLAR FLOW (lbmole/hr)	MOLE FRACTION	MASS FLOW (lb/hr)	MASS FRAC.	VOC MASS FRAC.	VOC MASS FRAC.	LIQUID VOLUME FLOW (barrel/day)	LIQUID VOLUME FRACTION
H2S	0	0	0	0			0	0
Nitrogen	0	0	0.0005	0			0	0
Oxygen	0	0	0	0			0	0
CO2	0.0183	0.0176	0.8067	0.0192			0.0669	0.0111
Argon	0	0	0	0			0	0
Methane	0.1356	0.1315	2.1751	0.0518			0.4975	0.0822
Ethane	0.3021	0.293	9.0849	0.2164			1.7489	0.289
Propane	0.3247	0.3149	14.3191	0.341	0.3410	0.4787	1.9351	0.3198
i-Butane	0.0874	0.0847	5.0778	0.1209	0.1209	0.1697	0.6187	0.1022
n-Butane	0.1024	0.0993	5.953	0.1418	0.1416	0.1991	0.6989	0.1155
22-Mpropane	0	0	0	0	0	0	0	0
i-Pentane	0.0283	0.0275	2.0431	0.0487	0.0487	0.0684	0.2244	0.0371
n-Pentane	0.0167	0.0162	1.2069	0.0287	0.0287	0.0403	0.1312	0.0217
22-Mbutane	0	0	0	0	0	0	0	0
Cyclopentane	0	0	0	0	0	0	0	0
23-Mbutane	0	0	0	0	0	0	0	0
2-Mpentane	0	0	0	0	0	0	0	0
3-Mpentane	0	0	0	0	0	0	0	0
n-Hexane	0.0087	0.0084	0.7469	0.0178	0.0178	0.0250	0.0772	0.0128
Mcyclopentan	0.0008	0.0008	0.0665	0.0016	0.0016	0.0022	0.0061	0.001
Benzene	0.0005	0.0005	0.0377	0.0009	0.0009	0.0013	0.0029	0.0005
Cyclohexane	0.0006	0.0006	0.0501	0.0012	0.0012	0.0017	0.0044	0.0007
2-Mhexane	0	0	0	0	0	0	0	0
3-Mhexane	0	0	0	0	0	0	0	0
224-Mpentane	0	0	0	0	0	0	0	0
n-Heptane	0.0019	0.0019	0.1923	0.0046	0.0046	0.0065	0.0192	0.0032
Mcyclohexane	0.0006	0.0006	0.0529	0.0015	0.0015	0.0021	0.0056	0.0009
Toluene	0.0007	0.0006	0.0603	0.0014	0.0014	0.0020	0.0047	0.0008
n-Octane	0.0005	0.0005	0.0547	0.0013	0.0013	0.0018	0.0053	0.0009
E-Benzene	0	0	0.0011	0	0	0	0.0001	0
m-Xylene	0.0001	0.0001	0.0155	0.0004	0.0004	0.0006	0.0012	0.0002
o-Xylene	0	0	0.0021	0.0001	0.0001	0.0001	0.0002	0
n-Nonane	0.0001	0.0001	0.0124	0.0003	0.0003	0.0004	0.0012	0.0002
n-Decane	0	0	0.0042	0.0001	0.0001	0.0001	0.0004	0.0001
n-C11	0	0	0.0009	0	0	0	0.0001	0
n-C12	0	0	0.0002	0	0	0	0	0
n-C13	0	0	0.0001	0	0	0	0	0
n-C14	0	0	0	0	0	0	0	0
n-C15	0	0	0	0	0	0	0	0
n-C16	0	0	0	0	0	0	0	0
n-C17	0	0	0	0	0	0	0	0
n-C18	0	0	0	0	0	0	0	0
n-C19	0	0	0	0	0	0	0	0
n-C20	0	0	0	0	0	0	0	0
n-C21	0	0	0	0	0	0	0	0
n-C22	0	0	0	0	0	0	0	0
n-C23	0	0	0	0	0	0	0	0
n-C24	0	0	0	0	0	0	0	0
n-C25	0	0	0	0	0	0	0	0
n-C26	0	0	0	0	0	0	0	0
n-C27	0	0	0	0	0	0	0	0
n-C28	0	0	0	0	0	0	0	0
n-C29	0	0	0	0	0	0	0	0
n-C30	0	0	0	0	0	0	0	0
H2O	0.0009	0.0009	0.0166	0.0004			0.0011	0.0002
Total	1.03	1	42.0	1	0.712	1	6.061	1

Sugarkane Central Battery 1
HYSYS Report for Low Pressure Separator Gas
Material Stream: LP Gas - a **Fluid Package: Basis-1**

Property Package: Peng-Robinson

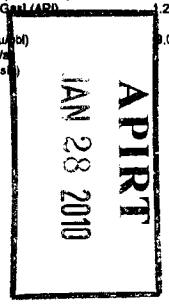
CONDITIONS

	Overall	Vapour Phase	Liquid Phase	Aqueous Phase
Vapour / Phase Fraction	1	1	0	0
Temperature: (F)	51.06	51.06	51.06	51.06
Pressure: (psia)	64.7	64.7	64.7	64.7
Molar Flow (MMSCFD)	1.573	1.573	0	0
Mass Flow (lb/day)	1.14E+05	1.14E+05	0	0
Std Ideal Liq Vol Flow (barrel/day)	821.8	821.8	0	0
Molar Enthalpy (Btu/lbmole)	-4.09E+04	-4.09E+04	-1.00E+05	-1.24E+05
Molar Entropy (Btu/lbmole-F)	42.05	42.05	39.9	11.91
Heat Flow (Btu/hr)	-7.06E+06	-7.06E+06	0	0
Liq Vol Flow @Std Cond (barrel/day)			0	0

PROPERTIES

	Overall	Vapour Phase	Liquid Phase	Aqueous Phase
Act. Gas Flow (ACFM)	236	236		
Act. Liq. Flow (USGPM)	0			0
Act. Volume Flow (barrel/day)	6.05E+04	6.05E+04	0	0
Avg. Liq. Density (lbmole/ft3)	0.8983	0.8983	0.3946	3.457
Cp/(Cp - R)	1.198	1.198	1.038	1.12
Cp/Cv	1.229	1.229	1.038	1.137
Cp/Cv (Ent. Method)	1.264			
Cv (Ent. Method) (Btu/lbmole-F)	9.499	9.499		
Cv (Semi-Ideal) (Btu/lbmole-F)	10.02	10.02	52.2	18.58
Heat Capacity (Btu/lbmole-F)	12.01	12.01	54.18	18.58
Heat of Vap. (Btu/lbmole)	8186			
Kinematic Viscosity (cSt)	1.671	1.871	1.065	1.492
Liq. Mass Density (Std. Cond) (lb/ft3)			44.74	63.33
Liq. Vol. Flow (Std. Cond) (barrel/day)			0	0
Liq. Vol. Flow - Sum(Std. Cond) (barrel/day)	0	0	0	0
Liquid Fraction	0	0	1	1
Lower Heating Value (Btu/lbmole)	5.39E+05	5.39E+05	2.13E+06	3.82E-03
Mass Cv (Btu/lb-F)	0.356	0.356	0.4689	0.9069
Mass Cv (Ent. Method) (Btu/lb-F)	0.3462	0.3462		
Mass Cv (Semi-Ideal) (Btu/lb-F)	0.3653	0.3653	0.4689	0.9208
Mass Density (API)	2.62E+04	2.62E+04	64.36	33.26
Mass Enthalpy (Btu/lb)	-1489	-1489	-900.3	-6856
Mass Entropy (Btu/lb-F)	1.532	1.532	0.3585	0.661
Mass Heat Capacity (Btu/lb-F)	0.4377	0.4377	0.4868	1.031
Mass Heat of Vap. (Btu/lb)	298.3			
Mass Lower Heating Value (Btu/lb)	1.96E+04	1.96E+04	1.91E+04	2.12E-04
Molar Density (lbmole/ft3)	1.22E-02	1.22E-02	0.4044	2.969
Molar Volume (ft3/lbmole)	81.98	81.98	2.473	0.3368
Molecular Weight	27.44	27.44	111.3	18.02
Phase Fraction [Vol. Basis]		1		
Phase Fraction [Mass Basis]	2.122e-314	1	0	0
Partial Pressure of CO2 (psia)	1.664			
Specific Heat (Btu/lbmole-F)	12.01	12.01	54.18	18.58
Std. Gas Flow (MMSCFD)	1.573	1.573	0	0
Std. Ideal Liq. Mass Density (lb/ft3)	24.65	24.65	43.92	62.3
Z Factor		0.9677	2.92E-02	3.98E-03
Watson K	16.64	16.64	12.64	8.524
User Property				
Phase Fraction [Molar Basis]	1	1	0	0
Surface Tension (dyne/cm)			19.46	74.57
Thermal Conductivity (Btu/hr-ft-F)	1.39E-02	1.39E-02	6.88E-02	0.3397
Viscosity (cP)	1.00E-02	1.00E-02	0.7675	1.278
Cv (Btu/lbmole-F)	9.769	9.769	52.2	16.34
HC Dew Point[Gas] (F)	50.43	50.43		
Higher Heating Value[Gas] (MMBtu/bbl)	8.81E-03	8.81E-03	3.37E-02	3.00E-04
Lower Heating Value[Gas] (MMBtu/bbl)	8.04E-03	8.04E-03	3.13E-02	5.99E-11
Mass Density (Std. Cond)[Gas] (API)	1.21E+05	1.21E+05	2.58E+04	1.75E+05
Water Dew Point[Gas] (F)	50.43	50.43		
Wobbe Index[Gas] (MMBtu/bbl)	9.02E-03	9.02E-03	1.60E-02	3.70E-04
Cost Based on Flow (Cost/s	0	0	0	0
Partial Pressure of H2S (psi	0			
Reid VP at 37.8 C (psia)			42.27	
True VP at 37.8 C (psia)	1820	1820	93.77	26.14

COMPOSITION



Sugarkane Central Battery 1
HYSYS Report for Low Pressure Separator Gas
Material Stream: LP Gas - a Fluid Package: Basis-1

Overall Phase COMPONENTS	Vapour Fraction 1.0000 MOLAR FLOW (lbmole/hr)	MOLE FRACTION	MASS FLOW (lb/hr)	MASS FRAC.	VOC MASS FRAC.	Normalized VOC MASS FRAC.	LIQUID VOLUME FLOW (barrel/day)	LIQUID VOLUME FRACTION
H2S	0	0	0	0			0	0
Nitrogen	0.0403	0.0002	1.1278	0.0002			0.0958	0.0001
Oxygen	0	0	0	0			0	0
CO2	4.4418	0.0257	195.4803	0.0413			16.2178	0.0197
Argon	0	0	0	0			0	0
Methane	89.7285	0.5196	1439.5048	0.3038			329.2216	0.4006
Ethane	42.6268	0.2468	1281.7832	0.2705			246.7571	0.3003
Propane	22.3217	0.1293	984.3186	0.2077	0.2077	0.5420	133.0215	0.1619
I-Butane	4.7855	0.0277	278.1531	0.0587	0.0587	0.1532	33.8918	0.0412
n-Butane	5.4114	0.0313	314.5351	0.0664	0.0664	0.1733	36.9277	0.0449
22-Mpropane	0	0	0	0	0	0	0	0
I-Pentane	1.4533	0.0084	104.8569	0.0221	0.0221	0.0577	11.5165	0.014
n-Pentane	0.8638	0.005	62.3215	0.0132	0.0132	0.0344	6.7765	0.0082
22-Mbutane	0	0	0	0	0	0	0	0
Cyclopentane	0	0	0	0	0	0	0	0
23-Mbutane	0	0	0	0	0	0	0	0
2-Mpentane	0	0	0	0	0	0	0	0
3-Mpentane	0	0	0	0	0	0	0	0
n-Hexane	0.4685	0.0027	40.3747	0.0085	0.0085	0.8222	4.1719	0.0051
Mcyclopentan	0.0421	0.0002	3.5426	0.0007	0.0007	0.0018	0.3225	0.0004
Benzene	0.0256	0.0001	1.9956	0.0004	0.0004	0.0010	0.1551	0.0002
Cyclohexane	0.0319	0.0002	2.6873	0.0006	0.0006	0.0015	0.2354	0.0003
2-Mhexane	0	0	0	0	0	0	0	0
3-Mhexane	0	0	0	0	0	0	0	0
224-Mpentane	0	0	0	0	0	0	0	0
n-Heptane	0.1105	0.0006	11.0752	0.0023	0.0023	0.0060	1.1042	0.0013
Mcyclohexane	0.0358	0.0002	3.5142	0.0007	0.0007	0.0018	0.3115	0.0004
Toluene	0.037	0.0002	3.4136	0.0007	0.0007	0.0018	0.2687	0.0003
n-Octane	0.0296	0.0002	3.3756	0.0007	0.0007	0.0018	0.3277	0.0004
E-Benzene	0.0006	0	0.065	0	0	0	0.0051	0
m-Xylene	0.0089	0.0001	0.9476	0.0002	0.0002	0.0005	0.0748	0.0001
o-Xylene	0.0012	0	0.1285	0	0	0	0.01	0
n-Nonane	0.0064	0	0.8201	0.0002	0.0002	0.0005	0.078	0.0001
n-Decane	0.0021	0	0.294	0.0001	0.0001	0.0003	0.0275	0
n-C11	0.0004	0	0.0675	0	0	0	0.0062	0
n-C12	0.0001	0	0.0187	0	0	0	0.0017	0
n-C13	0	0	0.0049	0	0	0	0.0004	0
n-C14	0	0	0.001	0	0	0	0.0001	0
n-C15	0	0	0.0004	0	0	0	0	0
n-C16	0	0	0.0001	0	0	0	0	0
n-C17	0	0	0	0	0	0	0	0
n-C18	0	0	0	0	0	0	0	0
n-C19	0	0	0	0	0	0	0	0
n-C20	0	0	0	0	0	0	0	0
n-C21	0	0	0	0	0	0	0	0
n-C22	0	0	0	0	0	0	0	0
n-C23	0	0	0	0	0	0	0	0
n-C24	0	0	0	0	0	0	0	0
n-C25	0	0	0	0	0	0	0	0
n-C26	0	0	0	0	0	0	0	0
n-C27	0	0	0	0	0	0	0	0
n-C28	0	0	0	0	0	0	0	0
n-C29	0	0	0	0	0	0	0	0
n-C30	0	0	0	0	0	0	0	0
H2O	0.2189	0.0013	3.9438	0.0008	0	0	0.2706	0.0003
Total	172.6927	1.00	4738.3548	1.00	0.3832	1.00	821.7974	1.00

Sugarkane Central Battery 1
HYSYS Report for Slop Tank Emissions
Material Stream: to Slop Tank

Fluid Package: Basis-1

Property Package: Peng-Robinson

CONDITIONS

	Overall	Vapour Phase	Liquid Phase	Aqueous Phase
Vapour / Phase Fraction	0.5368	0.5368	0.4618	0.0014
Temperature: (F)	28.33	28.33	28.33	28.33
Pressure: (psia)	64.7	64.7	64.7	64.7
Molar Flow (MMSCFD)	2.24E-02	1.20E-02	1.03E-02	3.15E-05
Mass Flow (lb/day)	2710	1038	1671	1.497
Std Ideal Liq Vol Flow (barrel/day)	15.09	6.872	8.112	4.28E-03
Molar Enthalpy (Btu/lbmole)	-5.38E+04	-4.33E+04	-6.58E+04	-1.24E+05
Molar Entropy (Btu/lbmole-F)	28.96	41.06	17.12	11.06
Heat Flow (Btu/hr)	-1.32E+05	-5.71E+04	-7.47E+04	-429.2
Liq Vol Flow @Std Cond (barrel/day)	14.87	6.109	7.92	4.21E-03

PROPERTIES

	Overall	Vapour Phase	Liquid Phase	Aqueous Phase
Act. Gas Flow (ACFM)		1.685		
Act. Liq. Flow (USGPM)	0.2236		0.2237	1.21E-04
Act. Volume Flow (barrel/day)	430.9	432.2	7.67	4.18E-03
Avg. Liq. Density (lbmole/ft3)	0.8965	0.809	0.5983	3.458
Cp/(Cp - R)	1.1	1.173	1.067	1.119
Cp/Cv	1.064	1.217	1.067	1.126
Cp/Cv (Ent. Method)		1.217		
Cv (Ent. Method) (Btu/lbmole-F)		11.07		
Cv (Semi-Ideal) (Btu/lbmole-F)	19.79	11.48	29.46	18.83
Heat Capacity (Btu/lbmole-F)	21.79	13.47	31.45	18.82
Heat of Vap. (Btu/lbmole)	1.43E+04			
Kinematic Viscosity (cSt)		1.309	0.3879	
Liq. Mass Density (Std. Cond) (lb/ft3)	32.46	22.8	37.57	63.33
Liq. Vol. Flow (Std. Cond) (barrel/day)	14.87	6.109	7.92	4.21E-03
Liq. Vol. Flow - Sum(Std. Cond) (barrel/day)	16.03	6.109	7.82	4.21E-03
Liquid Fraction	0.4632	0	1	1
Lower Heating Value (Btu/lbmole)	8.86E+05	6.43E+05	1.20E+06	4.03E-04
Mass Cv (Btu/lb-F)	0.4457	0.3378	0.4805	0.9175
Mass Cv (Ent. Method) (Btu/lb-F)		0.3377		
Mass Cv (Semi-Ideal) (Btu/lb-F)	0.4309	0.3504	0.4808	0.9231
Mass Density (API)	7902	2.05E+04	95.72	5.938
Mass Enthalpy (Btu/lb)	-1171	-1320	-1073	-6880
Mass Entropy (Btu/lb-F)	0.6523	1.253	0.2793	0.614
Mass Heat Capacity (Btu/lb-F)	0.4742	0.411	0.5129	1.033
Mass Heat of Vap. (Btu/lb)	311			
Mass Lower Heating Value (Btu/lb)	1.96E+04	1.96E+04	1.95E+04	2.24E-05
Molar Density (lbmole/ft3)	2.30E-02	1.31E-02	0.6329	3.56
Molar Volume (ft3/lbmole)	41.66	76.62	1.58	0.2809
Molecular Weight	45.93	32.77	61.32	18.02
Phase Fraction [Vol. Basis]	0.4621	0.4621	0.5376	2.84E-04
Phase Fraction [Mass Basis]	0.383	0.383	0.6165	5.53E-04
Partial Pressure of CO2 (psia)	1.464			
Specific Heat (Btu/lbmole-F)	21.78	13.47	31.45	18.82
Std. Gas Flow (MMSCFD)	2.24E-02	1.20E-02	1.03E-02	3.15E-05
Std. Ideal Liq. Mass Density (lb/ft3)	31.99	26.51	36.66	62.3
Z Factor		0.9486	1.95E-02	3.47E-03
Watson K	14.54	16.34	13.48	8.524
User Property				
Phase Fraction [Molar Basis]	0.5368	0.5368	0.4618	0.0014
Surface Tension (dyne/cm)			14.59	76.74
Thermal Conductivity (Btu/hr-ft-F)		1.15E-02	6.22E-02	0.3282
Viscosity (cP)		8.97E-03	0.2411	
Cv (Btu/lbmole-F)	20.47	11.07	29.46	16.53
HC Dew Point[Gas] (F)	175.9	28.32	215.8	297.6
Higher Heating Value[Gas] (MMBtu/bbl)	1.48E-02	1.05E-02	2.00E-02	3.00E-04
Lower Heating Value[Gas] (MMBtu/bbl)	1.36E-02	9.83E-03	1.85E-02	8.32E-12
Mass Density (Std. Cond)[Gas] (API)	7.10E+04	1.01E+05	5.21E+04	1.75E+05
Water Dew Point[Gas] (F)	52.96	28.31	28.33	297.8
Webbe Index[Gas] (MMBtu/bbl)	1.16E-02	9.84E-03	1.35E-02	3.70E-04
Cost Based on Flow (Cost/s)	0	0	0	0
Partial Pressure of H2S (psia)	0			
Reid VP at 37.8 C (psia)	346.9		98.83	
True VP at 37.8 C (psia)	696.4	1072	138.2	7.101

COMPOSITION

Sugarkane Central Battery 1
HYSYS Report for Slop Tank Emissions
Material Stream: to Slop Tank Fluid Package: Basis-1

Overall Phase COMPONENTS	Vapour Fraction 0.5368 MOLAR FLOW (lbmole/hr)	MOLE FRACTION	MASS FLOW (lb/hr)	MASS FRAC.	VOC MASS FRAC.	Normalized VOC MASS FRAC.	LIQUID VOLUME FLOW (barrel/day)	LIQUID VOLUME FRACTION
H2S	0	0	0	0			0	0
Nitrogen	0.0001	0	0.0025	0			0.0002	0
Oxygen	0	0	0	0			0	0
CO2	0.0321	0.0131	1.4136	0.0125			0.1173	0.0078
Argon	0	0	0	0			0	0
Methane	0.4049	0.1647	6.4959	0.0575			1.4856	0.0985
Ethane	0.5251	0.2136	15.7906	0.1398			3.0399	0.2015
Propane	0.574	0.2335	25.3109	0.2241	0.2241	0.2839	3.4205	0.2267
i-Butane	0.2081	0.0846	12.0946	0.1071	0.1071	0.1357	1.4737	0.0977
n-Butane	0.2868	0.1166	16.6682	0.1476	0.1476	0.1870	1.9569	0.1297
22-Mpropane	0	0	0	0	0	0	0	0
i-Pentane	0.1285	0.0523	9.2697	0.0821	0.0821	0.1040	1.0181	0.0675
n-Pentane	0.089	0.0362	6.4248	0.0569	0.0569	0.0721	0.6986	0.0463
22-Mbutane	0	0	0	0	0	0	0	0
Cyclopentane	0	0	0	0	0	0	0	0
23-Mbutane	0	0	0	0	0	0	0	0
2-Mpentane	0	0	0	0	0	0	0	0
3-Mpentane	0	0	0	0	0	0	0	0
n-Hexane	0.0898	0.0365	7.7427	0.0686	0.0686	0.0869	0.8	0.053
Mcyclopentan	0.0084	0.0034	0.7091	0.0063	0.0063	0.0080	0.0646	0.0043
Benzene	0.005	0.002	0.3927	0.0035	0.0035	0.0044	0.0305	0.002
Cyclohexane	0.007	0.0028	0.5888	0.0052	0.0052	0.0066	0.0516	0.0034
2-Mhexane	0	0	0	0	0	0	0	0
3-Mhexane	0	0	0	0	0	0	0	0
224-Mpentane	0	0	0	0	0	0	0	0
n-Heptane	0.0373	0.0152	3.7397	0.0331	0.0331	0.0419	0.3728	0.0247
Mcyclohexane	0.0117	0.0047	1.1456	0.0101	0.0101	0.0128	0.1016	0.0067
Toluene	0.0131	0.0053	1.208	0.0107	0.0107	0.0136	0.0951	0.0063
n-Octane	0.0167	0.0068	1.9119	0.0169	0.0169	0.0214	0.1858	0.0123
E-Benzene	0.0004	0.0002	0.0399	0.0004	0.0004	0.0005	0.0031	0.0002
m-Xylene	0.0056	0.0023	0.5954	0.0053	0.0053	0.0067	0.047	0.0031
o-Xylene	0.0006	0.0003	0.063	0.0007	0.0007	0.0009	0.0064	0.0004
n-Nonane	0.0055	0.0022	0.7087	0.0063	0.0063	0.0080	0.0674	0.0045
n-Decane	0.0024	0.001	0.3479	0.0031	0.0031	0.0039	0.0325	0.0022
n-C11	0.0007	0.0003	0.1017	0.0009	0.0009	0.0011	0.0094	0.0006
n-C12	0.0002	0.0001	0.0331	0.0003	0.0003	0.0004	0.003	0.0002
n-C13	0.0001	0	0.0104	0.0001	0.0001	0.0001	0.0009	0.0001
n-C14	0	0	0.0026	0	0	0	0.0002	0
n-C15	0	0	0.0012	0	0	0	0.0001	0
n-C16	0	0	0.0004	0	0	0	0	0
n-C17	0	0	0.0002	0	0	0	0	0
n-C18	0	0	0.0001	0	0	0	0	0
n-C19	0	0	0	0	0	0	0	0
n-C20	0	0	0	0	0	0	0	0
n-C21	0	0	0	0	0	0	0	0
n-C22	0	0	0	0	0	0	0	0
n-C23	0	0	0	0	0	0	0	0
n-C24	0	0	0	0	0	0	0	0
n-C25	0	0	0	0	0	0	0	0
n-C26	0	0	0	0	0	0	0	0
n-C27	0	0	0	0	0	0	0	0
n-C28	0	0	0	0	0	0	0	0
n-C29	0	0	0	0	0	0	0	0
n-C30	0	0	0	0	0	0	0	0
H2O	0.0051	0.0021	0.0922	0.0008			0.0063	0.0004
Total	2.4585	1	112.9263	1	0.7893	1	15.8891	1

Sugarkane Central Battery 1
HYSYS Report for Slop Tank Emissions
Material Stream: to Slop Tank **Fluid Package: Basis-1**

Vapour Phase COMPONENTS	Phase Fraction 0.5368 MOLAR FLOW (lbmole/hr)	MDLE FRACTION	MASS FLOW (lb/hr)	MASS FRAC.	VOC MASS FRAC.	Normalized VOC MASS FRAC.	LIQUID VOLUME FLOW (barrel/day)	LIQUID VOLUME FRACTION
H2S	0	0	0	0			0	0
Nitrogen	0.0001	0.0001	0.0025	0.0001			0.0002	0
Oxygen	0	0	0	0			0	0
CO2	0.0299	0.0226	1.314	0.0304			0.109	0.0156
Argon	0	0	0	0			0	0
Methane	0.3943	0.2988	6.3256	0.1463			1.4467	0.2075
Ethane	0.4393	0.3329	13.2085	0.3054			2.5428	0.3647
Propane	0.3116	0.2361	13.741	0.3177	0.3177	0.6143	1.857	0.2663
i-Butane	0.061	0.0463	3.548	0.082	0.082	0.1585	0.4323	0.062
n-Butane	0.0622	0.0471	3.6161	0.0836	0.0836	0.1616	0.4246	0.0609
22-Mpropane	0	0	0	0	0	0	0	0
i-Pentane	0.0116	0.0088	0.8353	0.0193	0.0193	0.0373	0.0917	0.0132
n-Pentane	0.0058	0.0044	0.4209	0.0097	0.0097	0.0188	0.0458	0.0066
22-Mbutane	0	0	0	0	0	0	0	0
Cyclopentane	0	0	0	0	0	0	0	0
23-Mbutane	0	0	0	0	0	0	0	0
2-Mpentane	0	0	0	0	0	0	0	0
3-Mpentane	0	0	0	0	0	0	0	0
n-Hexane	0.0016	0.0012	0.142	0.0033	0.0033	0.0064	0.0147	0.0021
Mcyclopentan	0.0002	0.0001	0.0126	0.0003	0.0003	0.0006	0.0012	0.0002
Benzene	0.0001	0.0001	0.0073	0.0002	0.0002	0.0004	0.0006	0.0001
Cyclohexane	0.0001	0.0001	0.0087	0.0002	0.0002	0.0004	0.0008	0.0001
2-Mhexane	0	0	0	0	0	0	0	0
3-Mhexane	0	0	0	0	0	0	0	0
224-Mpentane	0	0	0	0	0	0	0	0
n-Heptane	0.0002	0.0001	0.0195	0.0005	0.0005	0.0010	0.0019	0.0003
Mcyclohexane	0.0001	0.0001	0.0072	0.0002	0.0002	0.0004	0.0006	0.0001
Toluene	0.0001	0	0.0058	0.0001	0.0001	0.0002	0.0005	0.0001
n-Octane	0	0	0.0028	0.0001	0.0001	0.0002	0.0003	0
E-Benzene	0	0	0.0001	0	0	0	0	0
m-Xylene	0	0	0.0007	0	0	0	0.0001	0
o-Xylene	0	0	0.0001	0	0	0	0	0
n-Nonane	0	0	0.0003	0	0	0	0	0
n-Decane	0	0	0	0	0	0	0	0
n-C11	0	0	0	0	0	0	0	0
n-C12	0	0	0	0	0	0	0	0
n-C13	0	0	0	0	0	0	0	0
n-C14	0	0	0	0	0	0	0	0
n-C15	0	0	0	0	0	0	0	0
n-C16	0	0	0	0	0	0	0	0
n-C17	0	0	0	0	0	0	0	0
n-C18	0	0	0	0	0	0	0	0
n-C19	0	0	0	0	0	0	0	0
n-C20	0	0	0	0	0	0	0	0
n-C21	0	0	0	0	0	0	0	0
n-C22	0	0	0	0	0	0	0	0
n-C23	0	0	0	0	0	0	0	0
n-C24	0	0	0	0	0	0	0	0
n-C25	0	0	0	0	0	0	0	0
n-C26	0	0	0	0	0	0	0	0
n-C27	0	0	0	0	0	0	0	0
n-C28	0	0	0	0	0	0	0	0
n-C29	0	0	0	0	0	0	0	0
n-C30	0	0	0	0	0	0	0	0
H2O	0.0015	0.0012	0.0275	0.0006			0.0019	0.0003
Total	**1.3197**	**1**	**43.2468**	**1**	**0.5172**	**1**	**6.9725**	**1**

Normalized

Sugarkane Central Battery 1
HYSYS Report for Slop Tank Emissions
Material Stream: to Slop Tank Fluid Package: Basis-1
Liquid Phase Phase Fraction 0.4618

COMPONENTS	MOLAR FLOW (lbmole/hr)	MOLE FRACTION	MASS FLOW (lb/hr)	MASS FRAC.	VOC MASS FRAC.	VOC MASS FRAC.	LIQUID VOLUME FLOW (barrel/day)	LIQUID VOLUME FRACTION
H2S	0	0	0	0			0	0
Nitrogen	0	0	0	0			0	0
Oxygen	0	0	0	0			0	0
CO2	0.0023	0.002	0.0996	0.0014			0.0083	0.001
Argon	0	0	0	0			0	0
Methane	0.0106	0.0093	0.1703	0.0024			0.0389	0.0048
Ethane	0.0859	0.0756	2.5821	0.0371			0.4971	0.0613
Propane	0.2624	0.2311	11.5699	0.1662	0.1662	0.1733	1.5636	0.1927
I-Butane	0.147	0.1295	8.5466	0.1228	0.1228	0.1281	1.0414	0.1284
n-Butane	0.2246	0.1978	13.0521	0.1875	0.1875	0.1955	1.5324	0.1889
22-Mpropane	0	0	0	0	0	0	0	0
I-Pentane	0.1189	0.103	8.4344	0.1212	0.1212	0.1264	0.9264	0.1142
n-Pentane	0.0832	0.0733	6.0039	0.0862	0.0862	0.0899	0.6526	0.0805
22-Mbutane	0	0	0	0	0	0	0	0
Cyclopentane	0	0	0	0	0	0	0	0
23-Mbutane	0	0	0	0	0	0	0	0
2-Mpentane	0	0	0	0	0	0	0	0
3-Mpentane	0	0	0	0	0	0	0	0
n-Hexane	0.0882	0.0777	7.6007	0.1092	0.1092	0.1139	0.7854	0.0968
Mcyclopentan	0.0083	0.0073	0.6965	0.01	0.01	0.0104	0.0634	0.0078
Benzene	0.0049	0.0043	0.3855	0.0055	0.0055	0.0057	0.0299	0.0037
Cyclohexane	0.0069	0.0061	0.5802	0.0083	0.0083	0.0087	0.0508	0.0063
2-Mhexane	0	0	0	0	0	0	0	0
3-Mhexane	0	0	0	0	0	0	0	0
224-Mpentane	0	0	0	0	0	0	0	0
n-Heptane	0.0371	0.0327	3.7202	0.0534	0.0534	0.0557	0.3709	0.0457
Mcyclohexane	0.0116	0.0102	1.1386	0.0164	0.0164	0.0171	0.1009	0.0124
Toluene	0.013	0.0115	1.2021	0.0173	0.0173	0.0180	0.0946	0.0117
n-Octane	0.0187	0.0147	1.9091	0.0274	0.0274	0.0286	0.1853	0.0228
E-Benzens	0.0004	0.0003	0.0398	0.0006	0.0006	0.0006	0.0031	0.0004
m-Xylene	0.0056	0.0049	0.5847	0.0085	0.0085	0.0089	0.047	0.0058
o-Xylene	0.0008	0.0007	0.0829	0.0012	0.0012	0.0013	0.0064	0.0008
n-Nonane	0.0055	0.0049	0.7083	0.0102	0.0102	0.0106	0.0673	0.0083
n-Decane	0.0024	0.0022	0.3478	0.005	0.005	0.0052	0.0325	0.004
n-C11	0.0007	0.0006	0.1017	0.0015	0.0015	0.0016	0.0094	0.0012
n-C12	0.0002	0.0002	0.0331	0.0005	0.0005	0.0005	0.003	0.0004
n-C13	0.0001	0	0.0104	0.0001	0.0001	0.0001	0.0009	0.0001
n-C14	0	0	0.0026	0	0	0	0.0002	0
n-C15	0	0	0.0012	0	0	0	0.0001	0
n-C16	0	0	0.0004	0	0	0	0	0
n-C17	0	0	0.0002	0	0	0	0	0
n-C18	0	0	0.0001	0	0	0	0	0
n-C19	0	0	0	0	0	0	0	0
n-C20	0	0	0	0	0	0	0	0
n-C21	0	0	0	0	0	0	0	0
n-C22	0	0	0	0	0	0	0	0
n-C23	0	0	0	0	0	0	0	0
n-C24	0	0	0	0	0	0	0	0
n-C25	0	0	0	0	0	0	0	0
n-C26	0	0	0	0	0	0	0	0
n-C27	0	0	0	0	0	0	0	0
n-C28	0	0	0	0	0	0	0	0
n-C29	0	0	0	0	0	0	0	0
n-C30	0	0	0	0	0	0	0	0
H2O	0.0001	0.0001	0.0023	0			0.0002	0
Total	1.1354	1	69.6172	1	0.959	1	8.1123	1

Sugarkane Central Battery 1
HYSYS Report for Loading Operations
Material Stream: Liquids to Trucking Fluid Package: Basis-1

Property Package: Peng-Robinson

CONDITIONS

	Overall	Vapour Phase	Liquid Phase
Vapour / Phase Fraction	0	0	1
Temperature: (F)	39.82	39.82	39.82
Pressure: (psia)	14.95	14.95	14.95
Molar Flow (MMSCFD)	8.92E-02	0	8.92E-02
Mass Flow (lb/day)	2.79E+04	0	2.79E+04
Std Ideal Liq Vol Flow (barrel/day)	111.3	0	111.3
Molar Enthalpy (Btu/lbmole)	-1.06E+05	-4.68E+04	-1.06E+05
Molar Entropy (Btu/lbmole-F)	39.77	42.7	39.77
Heat Flow (Btu/hr)	-1.04E+06	0	-1.04E+06
Liq Vol Flow @Std Cond (barrel/day)	109.9	0	109.9

PROPERTIES

	Overall	Vapour Phase	Liquid Phase
Act. Gas Flow (ACFM)			
Act. Liq. Flow (USGPM)	3.185		3.185
Act. Volume Flow (barrel/day)	108.5	0	108.5
Avg. Liq. Density (lbmole/ft3)	0.3784	0.7283	0.3764
Cp/(Cp - R)	1.036	1.142	1.036
Cp/Cv	1.036	1.152	1.036
Cp/Cv (Ent. Method)	3.227	0.8932	
Cv (Ent. Method) (Btu/lbmole-F)	56.07	13.81	
Cv (Semi-Ideal) (Btu/lbmole-F)	54.57	13.94	54.57
Heat Capacity (Btu/lbmole-F)	56.56	15.93	56.56
Heat of Vap. (Btu/lbmole)	5.12E+04		
Kinematic Viscosity (cSt)	1.285	4.457	1.285
Liq. Mass Density (Std. Cond) (lb/ft3)	45.23	29.87	45.23
Liq. Vol. Flow (Std. Cond) (barrel/day)	109.9	0	109.9
Liq. Vol. Flow - Sum(Std. Cond) (barrel/day)	109.9	0	109.9
Liquid Fraction	1	0	1
Lower Heating Value (Btu/lbmole)	2.27E+06	7.98E+05	2.27E+06
Mass Cv (Btu/lb-F)	0.4597	0.3394	0.4597
Mass Cv (Ent. Method) (Btu/lb-F)	0.4722	0.339	
Mass Cv (Semi-Ideal) (Btu/lb-F)	0.4597	0.3424	0.4597
Mass Density (API)	60.68	7.62E+04	60.68
Mass Enthalpy (Btu/lb)	-891.5	-1148	-891.5
Mass Entropy (Btu/lb-F)	0.335	1.049	0.335
Mass Heat Capacity (Btu/lb-F)	0.4764	0.3911	0.4764
Mass Heat of Vap. (Btu/lb)	431.1		
Mass Lower Heating Value (Btu/lb)	1.91E+04	1.96E+04	1.91E+04
Molar Density (lbmole/ft3)	0.386	2.84E-03	0.386
Molar Volume (ft3/lbmole)	2.591	352.4	2.591
Molecular Weight	118.7	40.73	118.7
Phase Fraction [Vol. Basis]			1
Phase Fraction [Mass Basis]	2.122e-314	0	1
Partial Pressure of CO2 (psia)	0		
Specific Heat (Btu/lbmole-F)	56.56	15.93	56.56
Std. Gas Flow (MMSCFD)	8.92E-02	0	8.92E-02
Std. Ideal Liq. Mass Density (lb/ft3)	44.69	29.66	44.69
Z Factor		0.9829	7.23E-03
Watson K	12.57	15.32	12.57
User Property			
Phase Fraction [Molar Basis]	0	0	1
Surface Tension (dyne/cm)	21.41		21.41
Thermal Conductivity (Btu/hr-ft-F)	7.18E-02	1.01E-02	7.18E-02
Viscosity (cP)	0.9434	8.25E-03	0.9434
Cv (Btu/lbmole-F)	54.57	13.82	54.57
HC Dew Point[Gas] (F)	574.6	39.21	574.8
Higher Heating Value[Gas] (MMBtu/bbl)	3.65E-02	1.31E-02	3.65E-02
Lower Heating Value[Gas] (MMBtu/bbl)	3.39E-02	1.20E-02	3.39E-02
Mass Density (Std. Cond)[Gas] (API)	2.36E+04	8.06E+04	2.36E+04
Water Dew Point[Gas] (F)	-21.76	-8.12	-21.76
Wobbe Index[Gas] (MMBtu/bbl)	1.66E-02	1.09E-02	1.66E-02
Cost Based on Flow (Cost/s)	0	0	0
Partial Pressure of H2S (psia)	0		
Reid VP at 37.8 C (psia)	22.07	394	22.07
True VP at 37.8 C (psia)	31.24	643.4	31.24

COMPOSITION

Sugarkane Central Battery 1
HYSYS Report for Loading Operations
Material Stream: Liquids to Trucking **Fluid Package: Basis-1**

Overall Phase COMPONENTS	MOLAR FLOW (lbmole/hr)	MOLE FRACTION	MASS FLOW (lb/hr)	MASS FRAC.	VOC MASS FRAC.	Normalized VOC MASS FRAC.	LIQUID VOLUME FLOW (barrel/day)	LIQUID VOLUME FRACTION
H2S	0	0	0	0			0	0
Nitrogen	0	0	0	0			0	0
Oxygen	0	0	0	0			0	0
CO2	0.0036	0.0004	0.1566	0.0001			0.013	0.0001
Argon	0	0	0	0			0	0
Methane	0.0079	0.0009	0.1272	0.0001			0.0291	0.0003
Ethane	0.1202	0.0123	3.6152	0.0031			0.696	0.0063
Propane	0.5477	0.0559	24.1526	0.0208	0.0208	0.0209	3.264	0.0293
I-Butane	0.4352	0.0444	25.2982	0.0217	0.0217	0.0218	3.0822	0.0277
n-Butane	0.7469	0.0762	43.4157	0.0373	0.0373	0.0374	5.0972	0.0458
22-Mpropane	0	0	0	0	0	0	0	0
I-Pentane	0.5961	0.0608	43.0078	0.037	0.037	0.0371	4.7235	0.0425
n-Pentane	0.4916	0.0502	35.4704	0.0305	0.0305	0.0306	3.8568	0.0347
22-Mbutane	0	0	0	0	0	0	0	0
Cyclopentane	0	0	0	0	0	0	0	0
23-Mbutane	0	0	0	0	0	0	0	0
2-Mpentane	0	0	0	0	0	0	0	0
3-Mpentane	0	0	0	0	0	0	0	0
n-Hexane	0.9873	0.1008	85.0793	0.0731	0.0731	0.0734	8.7912	0.078
Mcyclopentan	0.0868	0.0089	7.3023	0.0063	0.0063	0.0063	0.6649	0.006
Benzene	0.0507	0.0052	3.9591	0.0034	0.0034	0.0034	0.3073	0.0028
Cyclohexane	0.0808	0.0082	6.9029	0.0059	0.0059	0.0059	0.5958	0.0054
2-Mhexane	0	0	0	0	0	0	0	0
3-Mhexane	0	0	0	0	0	0	0	0
224-Mpentane	0	0	0	0	0	0	0	0
n-Heptane	0.8127	0.0829	81.4317	0.07	0.07	0.0702	8.1184	0.073
Mcyclohexane	0.2138	0.0218	20.9932	0.018	0.018	0.0181	1.881	0.0167
Toluene	0.2774	0.0283	25.5555	0.022	0.022	0.0221	2.0112	0.0181
n-Octane	0.7536	0.0769	86.0893	0.074	0.074	0.0743	8.3569	0.0751
E-Benzene	0.0157	0.0016	1.6701	0.0014	0.0014	0.0014	0.1314	0.0012
m-Xylene	0.2758	0.0281	29.2781	0.0252	0.0252	0.8253	2.3126	0.0208
o-Xylene	0.0394	0.004	4.1853	0.0036	0.0036	0.0036	0.3245	0.0029
n-Nonane	0.5367	0.055	69.0875	0.0594	0.0596	0.0596	6.5681	0.059
n-Decane	0.5565	0.0568	79.182	0.0681	0.0681	0.0683	7.3996	0.0665
n-C11	0.3902	0.0398	60.9891	0.0524	0.0524	0.0526	5.6218	0.0505
n-C12	0.2789	0.0285	47.5007	0.0408	0.0408	0.0409	4.3301	0.0389
n-C13	0.256	0.026	47.0216	0.0404	0.0404	0.0405	4.2431	0.0381
n-C14	0.1983	0.0203	39.5331	0.034	0.034	0.0341	3.5482	0.0319
n-C15	0.1754	0.0179	37.2508	0.032	0.032	0.0321	3.3108	0.0298
n-C16	0.1355	0.0138	30.6853	0.0264	0.0264	0.0265	2.7094	0.0244
n-C17	0.1116	0.0114	26.836	0.0231	0.0231	0.0232	2.3552	0.0212
n-C18	0.0957	0.0098	24.3438	0.0209	0.0209	0.0210	2.1259	0.0191
n-C19	0.0877	0.0089	23.5455	0.0202	0.0202	0.0203	2.047	0.0184
n-C20	0.0638	0.0065	18.0188	0.0155	0.0155	0.0156	1.5605	0.014
n-C21	0.0556	0.0057	16.5501	0.0142	0.0142	0.0142	1.4287	0.0128
n-C22	0.0478	0.0049	14.8557	0.0128	0.0128	0.0128	1.2787	0.0115
n-C23	0.0399	0.0041	12.9386	0.0111	0.0111	0.0111	1.1078	0.01
n-C24	0.0319	0.0033	10.7983	0.0093	0.0093	0.0093	0.9227	0.0083
n-C25	0.0239	0.0024	8.4343	0.0073	0.0073	0.0073	0.7188	0.0065
n-C26	0.0239	0.0024	8.7696	0.0075	0.0075	0.0075	0.7456	0.0067
n-C27	0.0159	0.0016	6.0701	0.0052	0.0052	0.0052	0.515	0.0046
n-C28	0.0159	0.0018	6.2836	0.0054	0.0054	0.0054	0.5331	0.0048
n-C29	0.0159	0.0016	6.5173	0.0056	0.0056	0.0056	0.5507	0.0049
n-C30	0.0957	0.0098	40.4457	0.0348	0.0348	0.0349	3.4111	0.0307
H2O	0.0002	0	0.0033	0			0.0002	0
Total	9.7982	1	1163.2589	1	0.9965	1.00	111.2647	1

EMISSION CALCULATIONS BACKUP – HYSYS REPORTS

Liaise